This is Gemini Control at 29 hours and 40 minutes into the flight. Gemini 9 is now on its 19th revolution and is coming up around the Philippine's very shortly. At this time aboard the spacecraft according to our flight plan, Tom Stafford and Gene Cernan should be busy with the S-11 experiment. This is a photographic experiment designed to photograph the night time airglow and a sunrise twilight and any other unusual night phenomena such as the Northern Lights or an aberration in the airglow. While Tom Stafford aligns the spacecraft small end forward on the horizon, using a star as a reference, Cernan will align his camera on the horizon using the same star as a reference. They will take a series of three pictures of the eastern, western and southern horizons. Cernan uses a 70mm Maurer camera with and f.95 lens and he takes pictures with and without filters at various exposures. The Pilot Cernan will also photograph the thrusters that are firing as Tom Stafford maneuvers the spacecraft to the various directions. The experimenters are programming four pounds of fuel for each S-1 experiment. We have approximately 50 pounds of fuel on board, sufficient fuel to take us all the way through the Gemini 9 mission, with no problems. This is Gemini Control, 29 hours, 42 minutes into the mission.

END OF TAPE

This is Gemini Control at 30 hours into the flight. And the Green Team - or the Black Team headed by Flight Director, Glynn Lunney has just relieved the White Team. Gemini 9 has just finished a pass within range of the CSQ in the western Pacific. Very brief transmission at that time. Tom Stafford reported that he had just finished the air glow photography experiment and was preparing for the D-14 experiment. The - which information on communication systems operating through the ionosphere is obtained. The Cap Com at the CSQ reported that Gemini 9 was go as it passed out of acquisition. This is Gemini Control.

END OF TAPE

This is Gemini Control at 30 hours, 10 minutes into the flight. Gemini 9 is over the Hawaiian tracking station on its 19th revolution. We are not interrupting the crew with voice conversation during this pass because the communications experiment is being conducted. The Hawaii tracking station Cap Com reports he does have solid telemetry on both Gemini 9 and the target vehicle. Hawaii is receiving the D-14 experiment data and it looks very good. This is Gemini Control.

END OF TAPE.

This is Gemini Control at 31 hours and 10 minutes into the flight. There has been very little conversation between tracking stations and Gemini 9 during the past hour. Tracking stations have just been standing by during the pass of this Gemini 9 over their stations because the crew has been conducting the S-11 experiment, the airglow photography experiment. We have not wanted to interrupt them. The RKV, the Rose Knot tracking ship then off the east coast of South America reported a visual sighting of the spacecraft on this pass, revolution 20, from their deck just shortly after sunset. We do have tapes of the conversation that did take place from acquisition at California down through the Tananarive station and we'll play that for you now.

California remote UHF

CAL California remote

HOU Gemini 9 Houston

S/C Houston, Gemini 9

HOU Roger Tom. We're standing by. We don't have anything for you this pass. Except one question, if you can recall when you closed the S-12 door, do you have any idea how long that door wasrunning bufore it closed? Over.

S/C We couldn't hear it operate.

HOU Okay, fine. Thank you.

S/C We couldn't hear it operate open or closed.

HOU Fine. Thank you very much.

S/C I just got locked. We'll get more data on it tonight.

HOU The experimenter had a question on opening that up again. If it took longer than 30 seconds to close and if you didn't hear it I doubt that you could estimate that.

S/C Roger

HOU Nine, Houston. I have nodal update for you, when your ready to copy.

S/C Okay. Standby.

Go ahead

HOU Roger. Node 29 46 20, rev 19 109.1 east, 19 hours, 33 minutes, right ascension.

S/C Say again longitude and right ascension

HOU Roger. Longitude 109.1 east, righ ascension is 19 hours, 33 minutes.

S/C Roger, we got it. Thank you

HOU You bet.

Guaymas remote

California local

S/C Houston, Gemini niner

HOU This is Houston, go.

S/C Say again the time on that nodal update

HOU Roger. Time 29:46:20, rev 19.

S/C Okay we got it. 29:46:40

HOU 29:46:20

Gemini 9 Houston. One minute to LOS.

S/C Roger Houston.

Guaymas local

Texas remote

HOU RKV Cap Com, AFD

RKV AFD, RKV Cap Com

HOU Roger did you receive your MI

RKV I don't see any MI's yet.

HOU Okay, there's nothing at your site. The crew will be doing an S-11. Caution you not to call them and disturb them while they're doing S-11. If you want to give them some information you might pass it up to them and then tell them not to answer it.

RKV Roger will do. Be standing by.

HOU Okay

HOU RKV, Flight

RKV Flight, RKV

HOU You're standing by to stand by, is that correct?

RKV Thats affirm
I'll give them a call and tell them we're standing by and that's all.

HOU Say again

RKV I'll give him a call and tell him we have nothing for him and we're standing by

HOU Roger

HOU RKV, Flight

RKV Flight, RKV

HOU If the computer's on, would you send us an AOS and LOS computer summary.

RKV Roger

RKV (garbled - lots of noise)

RKV is off at the present

HOU Roger understand

RKV Gemini 9, RKV Cap Com. We have nothing for you this pass. We're standing by.

S/C RKV Roger

RKV The IMU is on, he's in pulse mode, he is doing some controlling.

HOU Roger. Thanks

RKV Roger

Everything looks normal

HOU Roger

RKV Flight we got a few people up on the deck looking for the spacecraft. Just passed us, we just passed sundown and we did have a visual sighting on it.

HOU Spacecraft or ATDA

RKV The spacecraft

HOU Sure, what else

We thank you

RKV Roger

They said they couldn't see any alligators up there.

HOU Roger, Roger. No alligators

RKV Gemini 9 RKV we have LOS in about a minute.

S/C Roger we're keeping on with the S-11

RKV Had LOS on Gemini

HOU Roger RKV

RKV Flight, this is RKV we've had LOS on ATDA and everything wasgo at LOS

HOU Roger RKV

S/C .....the pulse rates.....

TAN .....LOS.....

TAN Tananarive has LOS

HOU CSQ Cap Com AFD

HOU CSQ Cap Com AFD

CSQ AFD, CSQ to Cap Com how do you read

HOU Your loud and clear. Did you receive your MI

CSQ Negative

HOU Okay.

CSQ Correction, I've got it here.

HOU Besides the contigency alpha we also want a contigency bravo.

END OF TAPE

GEMINI 9A MISSION COMMENTARY, 6/4/66, 3:20 PM TAPE 117 PAGE 1

This is Gemini Control at 31 hours 40 minutes into the flight. Gemini 9 is over the mid-Pacific, not quite in range of the Hawaii station yet. The tracking stations are continuing to stand by without attempting to converse with the crew. At Hawaii acquisition the crew, Tom Stafford and Gene Cernan will perform another communications experiment. And we do not intend to disturb them at that time. We have very brief contact with them over the CSQ and we will play that tape for you now.

CSQ Gemini 9, if you are trying to contact CSQ you broke up.

S/C No, we were not trying to contact you CSQ

CSQ Roger, understand.

CSQ CSQ Flight Cap Com.

HOU Go ahead, CSQ.

CSQ ...computer just faulted. He is in mode 3 with his computer on and we will have to play his tape back to get the summaries to you.

HOU Understand your 12 18 just faulted.

CSQ That is affirmative.

HOU CSQ, Cap Com, AFD.

CSQ AFD, go.

HOU We have already received a main, an alpha and a bravo from you.

CSQ Do you want that OBP number program? With computer on ...light on.

CSQ	AFD, CSQ. Did you copy?
HOU	Affirmative. You calling Houston?
CSQ	AFD, CSQ Cap Com.
HOU	Negative OBC, CSQ.
CSQ	Roger, understand.
	Gemini 9, we have you go and LOS. Do not answer.
CSQ	CSQ has LOS, Gemini.
HOU	Roger, CSQ.
CSQ	We have LOS ATDA also.
HOU	Roger.

END OF TAPE

This is Gemini Control at 32 hours into the mission. Gemini 9 is now over the Pacific ocean, down close to the equator. We have entered the orbital phase in which Gemini 9 will sweep down over the southern hemesphere for the next several hours. We will not be within range of the California Guaymas or Texas station until tomorrow morning sometime. We had very brief conversation with the crew during the Hawaii pass and we will play that for you now.

AFD — Hawaii Cap Com, AFD.

HAW — AFD, Hawaii.

AFD — Roger, disregard that query on S-11.

HAW — Roger, will do.

Solid C-Band track intermittent..

HOU — Roger, Hawaii.

HAW — We are receiving good D-14 data.

HOU — Roger.

HAW — Gemini 9, Hawaii. We are receiving your D-14 data and all systems look good.

S/C — Gemini 9, Roger.

Houston, Gemini 9. Could you check with Houston and find out what is their estimate on our hydrogen quantity, please.

HAW — Roger, will do.

Did you copy that, Houston?

HOU — Roger, we copied. 78 per cent Hawaii.

HAW	78?
HOU	That is correct.
HAW	Gemini 9, Hawaii.
S/C	Go, Hawaii.
HAW	The apparent is 78 percent.
S/C	Roger.
HAW	Gemini 9, Hawaii. We have one minute to LOS and standing by.
S/C	Roger.
HAW	Hawaii has LOS on Gemini and ATDA.
HOU	Roger, Hawaii.

END OF TAPE

.....from Flight

RKV Flight, RKV Cap Com

HOU One more S-11 coming at you

RKV Say again

HOU One more S-11 pass coming at you

RKV Roger

HOU Roger, RKV

RKV Okay, he's got his computer on.

HOU Standby

HOU RKV Cap Com, AFD

RKV Go ahead

HOU Give us an OBC at your AOS and another one at LOS

RKV Roger

RKV Gemini 9, RKV Cap Com you need not acknowledge this transmission. We've got you GO on the ground and we're standing by.

RKV We've had LOS Gemini and the ATDA. Both looked good going over the hill.

HOU Roger, RKV

END OF TAPE

This is Gemini Control. 32 hours and 40 minutes into the flight. And Gemini 9 has just passed the east coast of Africa in range of the Tananarive station. We still are not attempting to contact the crew on these passes. Gemini 9 is in a night cycle on the 21st revolution throughout this entire night cycle is again conducting the S-11 experiment. The air glow horizon photography. All stations are monitoring the vehicles as they go by, report that they are go and look good. We show Gemini 9 in a 161.1 by 157.6 nautical mile orbit and the target vehicle in a 161. by 159.1 nautical mile orbit. This is Gemini Control.

END OF TAPE

GEMINI 9A (2) MISSION COMMENTARY, 6/4/66, 4:40 P. M.

This is Gemini Control, 33 hours into this mission. Gemini 9 is passing off the south coast of China, is within range of the Coastal Sentry Quebec tracking ship. We are standing by for conversation but we do not have any at the present time. We will stand by and see whether we can bring you this conversation between the CSQ and Gemini 9.

CSQ — Water report down is ....pilot and command pilot, please.

All split down to fifty fifty.

Roger, understand. Gemini 9, could you also give me a water ... count, please.

Roger. 02444.

CSQ — Roger, copy. 024444. Roger, Gemini 9, we have a valid temperature on the pilot at this time. You can remove the thermometers.

(long pause)

CSQ — Both vehicles are still looking good, Flight.

HOU — Roger.

(long pause)

CSQ — Gemini 9, would you place your quantity read switch to ECS O_2, please? Quantity read switch to fuel cell O_2. Quantity read switch to fuel cell H_2, please. Would you place your quantity read switch to off and would you give me a report on your S-11?

S/C — Roger, we have completed all S-11 as updated in the flight plan. We've completed all D-14's with the exception of the last one coming up at Hawaii.

CSQ — Roger. .....is go and you're around 20 seconds - 30 seconds from our LOS.

HOU — CSQ, Flight.

CSQ — Flight, CSQ Cap Com. Go.

HOU — Why don't you see if he's going to go ahead with the purge between you and Hawaii?

CSQ — Houston Flight, you're barely readable.

HOU — Roger. Why don't you see when he's going to do the purge.

CSQ — He's finished his purge, Flight.

HOU — He's finished?

CSQ — Yes sir.

HOU — Look all right to you on the ground?

CSQ — It was - the purge was okay. We've had LOS on Gemini.

HOU — Okay.

This is Gemini Control. As you heard Gene Cernan say, the last D-14 experiment, the communication's experiment through the ionosphere, is coming up on this next Hawaii pass in about eight minutes. Then at 33 hours and 30 minutes elapsed time, about 20 minutes from now, we will power down the spacecraft and the crew will have an eat period.

This is Gemini Control.

END OF TAPE

This is Gemini Control, 33 hours and 41 minutes into the flight. Gemini 9 is approaching the west coast of South America and nearing the end of its 21st revolution. During the pass over the Hawaii tracking station, an updated flight plan was passed to the crew. They were reminded to continue drinking water. We won't attempt to contact the crew again from any of the tracking stations until in the morning. Tom Stafford and Gene Cernan have powered down their spacecraft and they're eating right now. They will then go into a ten hour sleep period. Prior to this time they will again activate the S-12, the micrometeorite experiment and will deactivate that immediately upon arising in the morning. This will give the experimenter 10 hours bonus on this experiment because of the shift in the EVA times, we are able to perform this experiment during two sleep periods instead of one as originally planned. We have a tape of the Hawaii pass and we'll play that for you now.

HOU Roger, Hawaii

HAW We're receiving D-14 data

Hawaii has solid TM on both vehicles.

HAW Gemini 9, Hawaii

S/C Hawaii, Gemini 9

HAW Roger, if you have time during the D-14, I have a flight plan update for you

S/C Okay, we'll copy in just a minute

Go ahead with the update

HAW S-12 34:30, sequence 01, S-12 44:30, sequence 02, 44:30 through 45:30 eat period, 45:30 through 49:30 EVA trip,

S/C Roger Hawaii, Gemini 9 S-12 34:30, sequence 01, S-12 44:30, sequence 02, 44:30 through 45:30 eat period, EVA trip is 45:30 to 49:30

HAW That's affirmative and as we get near our LOS I'll be turning your adapter C-band off

S/C Roger

HOU Hawaii, Houston Flight

HAW Go flight

HOU Ask them to keep working on the water if they would. We got a big day tomorrow.

HAW Roger. Houston would like for you to keep working on that water. They say you've got a pretty big day coming up tomorrow.

S/C Okay, will do

HOU Hawaii, Houston Flight

HAW Go Flight

HOU We've just about cleared up all our air to ground business with the crew. You might mention that to them and from now on we'll just stand by in silence.

HAW Roger. Gemini 9, Hawaii.

S/C Niner, Hawaii

HAW This will be about all the air to ground conversations we'll have with you for awhile. We won't be calling you anymore for sometime unless there is something comes

HAW up we need you for.

S/C Okay, thank you very much.

HAW Houston, Hawaii

HOU Go ahead Hawaii

HAW Okay, we've transmitted C-band off and have confirmation that it is off

HOU Okay fine.

HAW We have LOS on both vehicles

This is Gemini Control. The range between Gemini 9 and the target vehicle is now 60 miles, with Gemini 9 ahead and below the ATDA. We estimate that during EVA tomorrrow the range between the two vehicles will be 135 to 140 nautical miles. This is Gemini Control, 33 hours and 46 minutes into the flight.

END OF TAPE

GEMINI 9A (2) MISSION COMMENTARY, 6/4/66, 5:50 PM TAPE 123 PAGE 1

This is Gemini Control 34 hours 10 minutes into the flight. Gemini 9 is over Africa and in its 22nd revolution. And this is the night side of this revolution. The tracking ship Rose Knot reported all systems look good when Gemini 9 passed by them. Reported that Tom Stafford and Gene Cernan appeared to be resting. This is Gemini Control.

END OF TAPE

This is Gemini Control at 35 hours 10 minutes into the flight. Gemini 9 is over the South Pacific Ocean about mid-way between Canton Island tracking station in South America. Tom Stafford and Gene Cernan are in the first hour of the 10 hour sleep period. Ground stations report that both pilots appear relaxed and appear to be sleeping. They reported they were getting good solid telemetry on Gemini 9, and that both it and the target vehicle are go. Guidance and Control Officer, Arnold Aldrich, reports that Stafford and Cernan performed todays experiment with negligible expenditure of OAMS thruster fuel. We show fuel remaining at very near the 50 pound mark, and we should be in very good shape for tomorrow's extravehicular activity. This is Gemini Control 35 hours 11 minutes into the flight.

END OF TAPE

This is Gemini Control. 36 hours 10 minutes since the lift-off of Gemini 9, which is now in drifting flight in its 23th revolution. Gemini 9 is over China coming up within range of the Coastal Sentry tracking ship. The spacecraft is powered-down for the crew's 10 hour sleep period, which will not end until 44 hours and 30 minutes elapsed time, that's 4:10 a.m. CST.

The flight surgeon reports that the data that he's receiving from the tracking stations indicate that Gene Cernan is powered-down pretty well too. But that Tom Stafford appears to arouse when....once in a while. Gemini 9's orbit is now 161.1 nautical miles apogee, 157.4 nautical miles perigee. The augmented target docking adapter, the target vehicle is in an orbit of 161, by 159 nautical miles. This is Gemini Control.

END OF TAPE

This is Gemini Control at 37 hours, 10 minutes into the flight. Gemini 9 started it 24th revolution a short time ago. It is now just off the east coast of South America, where the Rose Knot has a good solid track on it.

We have not attempted to contact the crew since the Hawaii pass on the 21st revolution almost four hours ago. However, we are continuing to monitor the spacecraft systems. They all look good, all tracking stations are giving the Gemini 9 a "GO". The RKV Cap Com reports that the flight surgeon aboard the Rose Knot says that Tom Stafford, who had been stirring around some earlier had now....has quieted down and both he and Gene Cernan appear to be resting well. The Gemini 9 is now 80 miles, 80 nautical miles ahead of the target vehicle. It will continue to pull ahead and we expect a range between the two vehicles of 135 to 140 nautical miles during the extravehicular activities tomorrow. This is Gemini Control.

END OF TAPE

This is Gemini Control at 38 hours 10 minutes and 30 seconds after lift-off. Both vehicles recently passed over the tracking ship Coastal Sentry, and both were go on the ground according to the Spacecraft Communicator aboard the Coastal Sentry. The spacecraft is now in its 24th revolution, and the ATDA in its 53rd revolution. They are both over the South Central Pacific, and in about 29 minutes they should be within the acquisition range of the tracking ship Rose Knot, which is hove-to off the coast of South America. At 38 hours 11 minutes and 9 seconds after lift-off this is Gemini Control.

END OF TAPE

This is Gemini Control at 39 hours, 10 minutes and 30 seconds after liftoff. Gemini 9 at the present time is over the Arabian peninsula. During the recent pass over the tracking ship Rose Knot, both the spacecraft and the target vehicle were shown as go on the ground by telemetry being received at the ship. After that pass over the RKV, the ship was released for the night in that this will be the last orbit to pass over the ship for the next several orbits. At 39 hours, 11 minutes and six seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control at 40 hours, 10 minutes and 30 seconds after liftoff. Earlier in this revolution the Gemini 9 passed over the tracking ship Coastal Sentry south of Japan, and the spacecraft communicator there reported that both vehicles -- that is the Gemini 9 and the Augmented Target Docking Adapter were go as they went over the hill. The Flight Director here, Cliff Charlesworth, released the Coastal Sentry for the night since it is also the Coastal Sentry's last pass until several orbits later. Both the spacecraft and the target have just crossed the longitude of the Cape which means they start a new revolution number -- number 26 for the spacecraft and 55 for the target. Sixteen minutes from now, both vehicles will cross over the Canary Islands tracking station; but it is not expected that there will be any conversation since the crew is still asleep at this time. At 40 hours, 11 minutes and 35 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control at 41 hours 10 minutes and 30 seconds after lift-off. Gemini 9 is crossing the northern portion of Australia at the present time. About mid-way through the 26th revolution for the spacecraft and the 55th revolution of the target. During the pass earlier in revolution over the Canary Islands tracking station, the Spacecraft Communicator at Canary reported that both, all systems were go on both the spacecraft and on the target. There has been no further contact with the crew since they're still asleep and not scheduled to wake-up for another 3 hours. At 41 hours 11 minutes and 13 seconds after lift-off this is Gemini Control.

END OF TAPE

This is Gemini Control, 42 hours, 10 minutes and 30 seconds after liftoff. Gemini 9 just finished its pass over the Canary Islands tracking station. Spacecraft communicator at that station said that all systems were go aboard Gemini 9. The crew is still in a sleep period, however, he did mention that the command pilot roused a little bit during the pass and also during the time the spacecraft was over the Canary station, the C-band beacon was turned off by ground command just before loss of signal. The spacecraft is presently in its twenty-seventh revolution, and the target in its fifty-sixth revolution. The measurements of the Gemini 9's orbit are 161.1 nautical miles apogee by 157.3 nautical miles perigee. At 42 hours, 11 minutes and 30 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control at 43 hours, 10 minutes and 30 seconds after lift-off. Gemini 9 is nearing the end of the 27th revolution and a short while ago, made a pass over the north edge of the Carnarvon, Australia tracking station acquisition circle. The spacecraft communicator reported that both the Gemini and the target systems were all "GO" on the ground. Biomedical telemetry received at the Carnarvon station indicated that the command pilot was sound asleep and the pilot appeared to be dozing.

The pass over the Carnarvon station lasted approximately six minutes and 48 seconds....a subsequence pass on the next revolution will be just about the middle, for a much longer pass.

43 hours, 11 minutes and 27 seconds after lift-off, this is Gemini Control.

END OF TAPE

This is Gemini Control at 44 hours 10 minutes and 30 seconds after lift-off. Gemini 9 at the present time is mid-way through the 28th revolution, and should be acquired by the Carnarvon, Australia tracking station within the minute. During the pass,...at the beginning of this revolution over the Eastern Test Range, Dr. Fred Kelly, Flight Surgeon here in Mission Control said that the biomedical telemetry readouts were being fed to him from the Eastern Test Range station. It showed that both crew men seem to be still fairly quiet. During the Canary pass a few minutes later, Canary Island tracking station reported all system were go. Carnarvon just reported they have acquisition aid contact with Gemini 9, telemetry solid on the spacecraft.....we're still standing by for the Carnarvon pass,.....telemetry is solid on the target docking adapter.....all systems are go on the spacecraft at Carnarvon.....Carnarvon now has a C-Band track with the spacecraft.....Spacecraft Communicator at Carnarvon reported to Flight Director that/is Cliff Charlesworth, here in Mission Control, that the pilot was still sound asleep and the command pilot was lightly dozing, according to the readouts they're getting there in Carnarvon.....at 44 hours 13 minutes and 24 seconds after lift-off this is Gemini Control.

END OF TAPE

This is Gemini Control Houston at 45 hours 10 minutes into the flight. The crew was awakened some 20 minutes ago as we began the state side pass, and Stafford greeted us with a very chipper, "hello down there". He noted that during the night, the cabin seemed to get a little cold, perhaps 10 degrees cooler than they've been running; here on the ground we had anticipated that. The problem seemed to be that we're building up, as much as we did in the flight of Gemini 7, a little excess fuel, fuel cell product water. The fuel cell product water empenges on the drinking water through a series of bladders, so the solution is worked out to dump some of the drinking water, and this was carried out, we dumped on the order of a pound to pound and a half of drinking water by directly connecting the drinking water nossle,the squirt gun, to the uriceptacle and by placing certain switches to by-pass the radiator to dump the water directly over board through the water boiler. As I say this procedure was carried out during the state side pass. The crew has tagged up on their start of their EVA preparations which will begin during this revolution. We also to get a crew status report in some detail, they will get a planned landing area up-date at Canary, which acquisition circled they're entering now.....at 46 hours and 28 minutes they are to receive a go, no go, for a 46-1 flight or the completion of the planned mission. At 48 hours and 58 minutes they are to receive their no, go no, for cabin de-pressurization, leading to the extravehicular activity. The sunrise time for the 31st revolution, which is critical for the start of the extravehicular activtiy, is set for 49 hours 26 minutes and 34 seconds, that's 49 hours 26 minutes sunrise on the 31st rev. We have now the tape of the state side pass, we'll play that for you now.....

END OF TAPE

TEX Texas, remote.

HOU FLIGHT Gemini 9, Houston.

SPACECRAFT Hello, down there.

HOU FLIGHT Good morning, how are you doing?

SPACECRAFT Alright, I guess. The sleeping got pretty cold up here last night.

HOU FLIGHT Yeah, we've been watching your temperatures. Look we got a little....problem with the water building up, what's your counter read?

SPACECRAFT Standby Neil. We're at 2472.....02472.

HOU FLIGHT O.K., we're going to have you....have you taken any water at all out this morning?

SPACECRAFT We've just started draining the system and drinking it now.

HOU FLIGHT Well, we're going to have to dump some water....our... our suggestion here is to..dump it through the water boiler and we have a procedure we're ready to give you when..when you are ready to copy.

SPACECRAFT O.K.

HOU FLIGHT It's...what it amounts to is..dump at about two pounds of water, which is 60...66..counts on the gun.

SPACECRAFT Go ahead, Neil, with the procedure.

HOU FLIGHT O.K., we'll want to put..the radiator to bypass now.

SPACECRAFT Bypass.

HOU FLIGHT O.K., then your water valve and condensate valve in normal, which is I expect/where they are.

SPACECRAFT Roger, both is on.

HOU FLIGHT O.K., then we'll want to squirt out.....using the

HOU FLIGHT The water line into the M-5...receptacle and put the ...waste valve in evap.

SPACECRAFT Roger, Put the water gun to M-5 receptacle and the waste valve to evap.

HOU FLIGHT Roger, then put the selector valve on the M-5 collector to bypass and shoot 66 clicks of the water gun in there and see how much you bounce around inside the cabin.

HOU FLIGHT Another thing we'd like for you to do if you get a chance is to close the S-12 doors.

SPACECRAFT Neil, we have just closed them.

HOU FLIGHT And 9, Houston, we've got a flight plan update for you, when you are ready to copy that...I don't mean to get you too busy here, but let me know. We've got about 10 minutes yet before we lose contact.

SPACECRAFT O.K.

HOU FLIGHT Let us know when you start clicking the gun too.

SPACECRAFT Roger, we're going to start off clicking the gun.

HOU FLIGHT Roger, you're clicking it now.

SPACECRAFT Right.

HOU FLIGHT O.K. Kinda watch your pressure down here.

SPACECRAFT O.K., Neil, ready to copy.

HOU FLIGHT O.K., we have first a node for you , it's 444809, remarks-rev 28, 121.7 west, right ascension 19 hours 14 minutes, 451...a time of 4511, at Canary, there will be a crew status report. PLA update, fuel cell purge.

SPACECRAFT Got it.

HOU FLIGHT O.K. at forty-five, 30. EVA prep start,

HOU FLIGHT At 46;28, I have a GO/NO/GO for 46 dash one.

SPACECRAFT Roger, good.

HOU FLIGHT At 48:58. Have GO/NO GO for depress.

SPACECRAFT [Roger.

HOU FLIGHT And your sunrise, Tom, is 49 26 34.

SPACECRAFT Roger. 492634 for sunrise for depress.

HOU FLIGHT That's right. Now if you can drink some more water or put some in some water bags.there why probably help the margin that we've got for the next four or five hours.

SPACECRAFT Roger, We've done 25 clicks on the water boiler.

HOU FLIGHT Roger.

SPACECRAFT And I'm bring the spacecraft to a stabilize position. This should help to heat it up.

HOU FLIGHT O.K., you do have your radiator in bypass, don't you?

SPACECRAFT That's affirmative.

HOU FLIGHT O.K.

SPACECRAFT Neil, we had an evap. pressure.....(garbled)...evap. pressure that you're on.

HOU FLIGHT O.K. That's good. I want to remind you here, Tom, that over Canary in about 10 minutes, six to 10 minutes, they'll be giving you a PLA update. You might check to make sure that you've got that right lookout.

SPACECRAFT Yeah, we still have the evaporator pressure layout, I've got to keep to it .

HOU FLIGHT O.K., Tom. We're expecting that. How many clicks are you up to?

SPACECRAFT 39.

HOU FLIGHT 39?

SPACECRAFT Roger, 40 now.

HOU FLIGHT O.K.

GRAND TURK Hello, this is Grand Turk.

HOU FLIGHT O.K., we're about to lose you here, Tom. Let's stop wherever you are and get a gun count.

SPACECRAFT Alright, I'm 47 clicks and the last digit is 2530.

HOU FLIGHT O.K., your last reading is 2530?

SPACECRAFT Right.

HOU FLIGHT O.K., Canary will have you here in four or five minutes.

SPACECRAFT Do you want us to continue on until we get the total load to up right?

HOU FLIGHT No, Let's just let it go right there, that is good enough.

SPACECRAFT Roger.

ANTIQUA Hello, LOS, Antiqua.

END OF TAPE

This is Gemini Control. That concludes the stateside pass. We got more information a few minutes later from the Canary station regarding the crew status. Stafford reports they have drunk since the last reporting period some 40 ounces of water. They've had one meal apiece. He described their sleep last night -- each man about four hours of solid sleep -- six to eight hours of dozing sleep. They sound rested. Here is the Canary tape.

CYI Canary has ac aid contact.

HOU FLT Roger, Canary.

CYI We have TM solid. Gemini 9, Canary Capcom.

S/C Canary, 9. Go.

CYI Roger. Would you put your thermometers in for the oral temp. We have TM solid, Flight -- C-band track.

HOU FLT Roger, Canary. Canary, Houston Flight.

CYI Go, Flight.

HOU FLT OK. When you can give it to them, ask them to put the radiator back to flow. Go back to the normal configuration on the water management, and the evaporator heater off.

CYI Roger. Gemini 9, Canary. We have a valid temp on both. Would you place your radiator to flow.

S/C Flow?

CYI Roger.

S/C We're standing by for the PLA update.

CYI Roger. We'd also like your water management system back to normal configuration and the evaporator heaters off.

S/C Evaporators off.

CYI OK. 9, I'll give you the area and the times and then we'll go back to the back angles and weather.

S/C Roger. Standby one, please.

CYI Roger. Standing by.

HOU FLT Canary, Houston Flight.

CYI Go, Flight.

HOU FLT Check to see if he has an evaporator pressure light at this time. Just ask him if he still has an evaporator pressure light.

CYI Gemini 9, do you still have an evaporator pressure light?

S/C Negative. It's out and I've got the heater off, and I'm ready to copy.

CYI Roger. Houston Flight, Canary. We should see if it's on and ring A is decreasing on the ATDA.

HOU FLT Roger. Carry it with your update.

CYI Gemini 9, the area 29-1 -- 44:34:30,20 +48, 26 +58. Area 30-1 -- 26:10:02, 20 +58, 27 +09. Area 31-1 -- 47:44:48, 21 +12, 27 +38. Area 32-4 -- 50:37:23, 20 +55, 26 +50. Area 33-4 -- 52:10: -- correction on that -- the GATRC is 52:12:49, 21 +05, 27 +18. Area 34-4 -- 53:48:18, 21 +12, 27 +33. Area 35-3 -- 55:07:29, 20 +49, 26 +50. Area 36-3 -- 56:42:55, 20 +59, 27 +07. Area 37-3 -- 58:18:23, 21 +13, 27 +22. Are you ready for your back angles?

S/C Go.

CYI Roger. All the back angles are as follows: roll left 85, roll right 95. The weather in the following areas is marginal: 30-1, 31-1, 35-3, 36-3 and 37-3. There is no set maneuver associated with any of these areas. Do you copy?

S/C Roger. Gemini 9. Roger. Would you give me the times again for 29-1 and 30-1 just to check.

CYI Roger. 29-1 -- 44:34:30, 30-1 -- 46:10:02.

S/C Got them all.

CYI Roger.

S/C ..... starting to .... now, and horizon scan .....

CYI Flight, Canary. Could you come through on about the TM signal on the ATDA?

HOU FLT Yes, I copy.

CYI Roger.

END OF TAPE

CYI Do I go ahead with this fuel cell purge at this time?

HOU Yes, go ahead with the flight plan.

CYI Roger, we'll go ahead with the food and water report and all that.

HOU Say again.

CYI We'll go ahead with the food and water report first.

HOU Okay.

CYI Gemini 9 we'd like a food and water report on each crew man.

S/C Stand by.....Okay since the last time we've only had about 40 ounces of water, dumped some in the water boiler, and we've had one meal.

CYI Okay can you give me a sleep report?

S/C Roger, we had about 4 hours of solid sleep with about 6 hours of dozing.

CYI Roger copy....you're looking good 9, you can start with your fuel cell purge when you're ready.

S/C Roger.

HOU Canary, Houston.

CYI Go ahead flight.

HOU Send us an A summary Gemini.

CYI Roger....it's on its way.

S/C When I came over the hill flight, then CKO, 6 suit inlet temp was way up. On the way up for the radiator back to flow corrected all that.

HOu	Roger.
CYI	We've had Gemini LOS.
HOU	Roger.
HOU	Kano go remote.
CYI	Canary Cap Com AFD.
CYI	Go ahead Steve.
CYI	Could you give me the PCM counts, and the C-L-O 1, water pressure?
CYI	C-L-O one, Charlie, Lema , zero one, Roger.
CYI	Okay that count on Charlie, Lema, zero 1 is 2 2 1.
HOU	Roger, thank you...would you put that in your books please.

END OF TAPE

This is Gemini Control, Houston at 45 hours, 40 minutes into the flight. Several items as far as consumption history here for the notes, we've had no further contact with the spacecraft since Canary. It is now crossing the Indian Ocean.

We have approximately 1200 amp hours remaining in the fuel cells. They are continuing to produce electricity at a very good rate. Total of about 50 percent of the capacity remaining. Cabin pressure has held at a very steady 5.1 PSI since the beginning of the mission. Virtually no change noted in that.

The spacecraft orbit presently shows 157.3 miles by 161.1 miles, the target vehicle is in an orbit 158.6 miles by 1. excuse it...160.7 miles. During the extravehicular exercise, the target will be approximately 145 miles behind the spacecraft. Earlier Stafford was advised that the weather was marginal in the 30 dash one area, he was also told that it was marginal in the dash three areas. Since that report went up, we've had new information from ships in the area. And they advise that the weather is improving very nicely and they see no weather problem should a landing be necessary in those areas. We anticipate no need for a landing in those areas, but the area is improving in the prime recovery area in the Atlantic.

Propellant quantity...OAMS propellant, we show some 90...85 pounds of propellant, still available for this mission...approximately 50 pounds of fuel and 80 pounds of oxidizer and a plan that would give us about 85 pounds of usable propellant. This is Gemini Control Houston at 45 hours, 43 minutes.

END OF TAPE

This is Gemini Control Houston 46 hours even in the flight. Over Carnarvon a few minutes ago the crew was having breakfast, Bill Garvon put one question to them, he said if you don't have a full mouth of food, he'd like to know the on-board propellent quantity, and Tom Stafford with about a half mouth full of food replied 7 percent, which agrees with the earlier number which we passed on to you about 85 pounds of usable propellent remaining. The status remains unchanged, we will play this brief inter-change here for you at this time.....

CAR Carnarvon has telemetry solid in the spacecraft, all systems go.

HOU Roger.

CAR I've got target contact.

HOU Roger.

CAR Telemetry solid in the ATDA.

HOU Roger.

CAR We have C-Band track.

CAR Gemini 9, Carnarvon Cap Com, all systems are go would you place the quantity read switch to ECS 02.

S/C Gemini 9, Roger.

CAR Fuel cell 02.

Fuel cell H_2.

Quantity reads off.....okay if you don't have a mouth full up there we'd like a prop quantity read out when you get a chance.

S/C ...7 percent.....

CAR Okay.

CAR Flight, Carnarvon.

HOU Hello Carnarvon.

CAR Did you copy that prop quantity?

HOU Affirmative, Bill how do the rest of the systems look?

CAR Look real good.

HOU Okay.

CAR Flight Carnarvon.

HOU Hello Carnarvon.

CAR That fuel cell water pressure from the TM reads 18, 1 8.

HOU Roger.

HOU Could I have a PCM count on that Bill?

CAR Roger....

CAR Flight Carnarvon.

HOU Go Carnarvon.

CAR Okay that PCM count is 210.

HOU Roger, thank you.....

CAR Gemini 9, Carnarvon....we're 1 minute to LOS.

S/C Go ahead Carnarvon.

HOU Carnarvon could we have a LOS Gemini outline.

CAR Roger.....Carnarvon has LOS on the spacecraft.

HOU Roger, Carnarvon.

CAR LOS on the ATDA.

END OF TAPE

This is Gemini Control Houston, 46 hours, 10 minutes into the flight. The weather this morning goes like this. This is the forecast for the next 24 hours, or in other words, up to end of mission. In the mid-Pacific landing zone, centered about 300 miles northeast of Honolulu, partly cloudy skies, winds westerly 10 to 15 knots and seas three to four feet. In the western Pacific landing zone, centered 700 miles south by soutwest of Tokyo, mostly cloudy skies with scattered showers, with winds southwesterly 15 to 20 knots, and seas five to six feet. In the eastern Atlantic zone, centered 300 miles west of the Cape Verde Islands, partly cloudy skies, winds northeasterly about 15 knots and seas four feet. In the western Atlantic, end of mission landing zone near 75 degrees west longitude, mostly cloudy skies with scattered showers, winds easterly at 15 to 18 knots and seas four to five feet. That shower activity reportedly is moving to the northeast and probably will clear out of the area within the next 24 hours. No new contacts with Gemini 9 since we left Carnarvon, we are in the Canton Island area. The crew is still eating breakfast, we don't expect additional contact until they reach the states, which will occur in some 12 to 13 minutes. This is Gemini Control Houston.

END OF TAPE

GEMINI 9a(2) MISSION COMMENTARY, 6/5/66, 6:20 AM TAPE 141 PAGE 1

This is Gemini Control Houston 46 hours 40 minutes into the flight. The crew is now well along in their very detailed check leading up to the EVA exercise. This check lists runs, to give you some idea of the depth of it, it runs 11 single spaced pages in the flight plan. Hundreds of items involved. Switch settings are specified for every system onboard plus a great deal of equipment, special equipment involvment for Gene Cernan. During the recent pass across the states the spacecraft now slightly east of Bermuda, the crew was given a go for a 46-1, in other words the full 72 hour mission. That report brought back a very cheery, "Thank you" from Cernan. Last night the S-12 experiment, the emulsion pack, which is used to collect micrometeorites was exposed for another 10 hours. The first night out the exposure time on S-12 was eight hours and 40 minutes. So the 10 hours is an added dividend having to do with the postponement of EVA, of course. We have now a very brief tape of the conversation across the United States, there was not very much chatter because Tom Stafford indicated they were busy with their EVA preparations. They postponed certain discussions until later in this pass. Here is the conversation.

HOU Guaymas go local, Texas go remote.

GYM Guaymas local.

HOU Gemini 9, Houston.

S/C Go ahead, Houston.

HOU Roger, Gene. We are going ahead early on this cross feet until they can take a look at across

HOU the states and we will go ahead and close the cross feed and fuel cell two heater off and we will come back on with that heater at Carnarvon. We want to watch that pressure temperature on that for a while.

S/C Okay, fuel cell 02 heater is off now and you want the cross feed closed. Is that correct?

HOU That is affirmative.

S/C Okay, it is closed and the heater is off.

HOU Roger, got some good news for you. Your Cubs won yesterday, 5 to 3.

S/C Great. How are the Astros?

HOU Well, I am sorry to say they are on the wrong end of a 9 to 6 score.

S/C I was batting zero yesterday, 500 today, maybe a 1000 tomorrow.

HOU Atta boy. How about a 1000 by noon.

S/C Yeah, that is all right.

HOU Gemini 9, Houston.

S/C Go ahead, Houston.

HOU Roger. You have your go for 46-1.

S/C Thank you. How is the weather down there today?

HOU Well, it was a little foggy when I came in this morning. I think it is probably going to be nice. Looks real good now, the late comers say.

HOU Gemini 9, Houston.

S/C Houston, Go ahead.

HOU This little test we ran a little while ago with that water, Tom, and dumping that stuff overboard we are not quite sure what is happening so would you give us a gun count when you complete drinking water any time during the next two revs.

S/C Okay, roger, we are right in the middle of EVA preparation. We will give you one later.

HOU Roger. 9, Houston. On that water we only need that when you are through drinking. Just before EVA. That is all we are really interested in. Just tank up on that stuff.

S/C Roger, we have been going pretty good on it.

HOU That a boy.

S/C Right now we are putting on the wire connectors and taping the connections.

HOU Houston, roger.

AFD Bermuda go remote.

BDA Remote.

Go ahead AFD

HOU Okay, you understand. We want to advise them when you have acquisition and he need not acknowledge.

BDA That is affirmative.

AFD And LOS, minus one. And then say, need not acknowledge one time.

BDA Roger.

HOU Okay be no more MI during EVA prep.

BDA Roger.

HOU Roger. And you also...

BDA Roger.

HOU Gemini 9, Houston we have approximately one minute to LOS and from now on we will be passive. We will give you a call AOS and one minute from LOS.

S/C Roger, we will keep you informed. We are getting the y connections on and working through there.

HOU Roger.

S/C Sequence 24.

HOU Roger Tom. Thank you.

END OF TAPE

This is Gemini Control Houston at 47 hours into the flight. EVA preparations are continuing very nicely. Over the Canary Station a few minutes ago Tom Stafford reported "we've got the big snake our of the black box." This is a reference to having removed the umbilical - the 25 foot umbilical from its stowage place. They have the Y-connectors in place now on the chest pack and Gene Cernan probably is hooking up the umbilical just about now. Relatively little communication between the ground and the spacecraft, we're letting them proceed at their own pace and standing by to give them any help as they might call for it. We have this brief conversation recorded from the Canary Station and the Kano Station. We'll play it for you now.

CYI Canary has acq aid contact

HOU Roger Canary

CYI We have Gemini TM solid C-band track, all systems GO

HOU Roger

CYI Gemini 9 Canary Cap Com. We have you go on the ground. You need not acknowledge this transmission, we're standing by.

S/C You can inform Houston that we've got the big snake out of the black box.

CYI Roger nine.

CYI Do you copy Flight?

HOU Copy. Affirmative

HOU	Canary this is AFD
CYI	Go AFD
HOU	We'd like an LOS Gemini main
CYI	Roger
	One minute to Canary Island LOS
CYI	Canary has LOS all signals. All systems GO Flight
HOU	Roger Canary
	Kano go remote
KNO	Kano's remote
HOU	Gemini 9, Houston. Standing by.
	Gemini 9, Houston. You can go back to fuel cell
	O2 heater at auto at your convenience. Over
S/C	Got that

END OF TAPE

This is Gemini Control at Houston, 47 hours, 10 minutes into the flight. The spacecraft's over the Tananarive station. No new contact since we last heard from the crew via Kano. EVA preparations continuing. We are getting a little talk now. A little static in the background. Standby one, please. Tom Stafford advised he'd been running in platform mode, and he noticed a little roll developing. It's completely under control. He's back in 000 rates. He just wanted to advise us. Our flight plan is completely clear with - except for the item of EVA prep which continues to run. We expect the sunrise on that 31st rev to occur 49 hours, 26 minutes in elapsed time. A little more than two hours from now, and that's about the time that the hatch would open and we'd start ingress. That's the planned ball park right now. It may be refined later. At 47 hours and 12 minutes into the flight this is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. Fourty-seven hours 18 minutes into the flight. And during the course of the Tananarive pass we learned from Tom Stafford, that he was having a problem with his number three thruster. This is a roll thruster. He noted a rate building up in roll. It is co-incidental I am sure, but this is precisely the same area where Neil Armstrong developed trouble during his flight with another thruster and of course the rates built up much more severely. In any case he has identified the problem in number three thruster. He shut it down and he will compensate for it by using other modes of thrusters to perform the various maneuvers. We do not expect to have any effect on the EVA exercise, at this time. The problem will be looked at very carefully over Carnarvon and additional judgments may be coming along, but right now we are still moving right ahead with our EVA preparations. Here is the voice tape of the Tananarive pass.

AFD Tananarive go remote.

TAN Tananarive remote.

HOU Gemini 9, Houston standing by.

S/C This is Gemini 9.

HOU 9. Houston. Go.

S/C I am having a little trouble with ...

HOU You are having a little trouble with what, Tom?

S/C Roger, with flash load, just took off in a big roll on me. Will keep you informed, we have got it back now to 000.

HOU Roger, understand.

S/C (Garbled)

HOU Gemini 9, Houston, go.

S/C ....(garbled) stand by.

HOU Roger, understand number three.

S/C Yaw right and roll left, seems to be our main problem.

HOU Roger.

S/C Okay, Houston, we are zero.

HOU This is Houston, roger, Tom and we have one minutes until LOS Tananarive.

S/C Roger. ....number three thruster is out.

HOU Roger. Number three thruster is out.

S/C Roger. ...(garbled)

HOU Roger, number three thruster is out.

S/C ...and also yaw and roll pitch...number three thruster is out.

HOU Roger, Tom understand, suggest roll logic to pitch. Over.

END OF TAPE

This is Gemini Control Houston, 47 hours, 31 minutes into the flight. As we noted over Tananarive, Tom Stafford reported some trouble with his number three thruster. He went through a varied detail check of his control modes crossing the Indian Ocean. When we picked him up at Carnarvon a few minutes ago, he and the ground seemed to be pretty well frustrated by the problem. He reported that the thruster - the inoperation of thruster number three was putting him into a roll rate of as much as 20 to 30 degrees per second, when he energized his second in-plat or the platform mode. This frustration continued for some seconds and then we have to chalk up a big plus sign for our Guidance Navigation Control Officer, Gerald Griffin. In a very quiet voice he asked him to check his circuit breakers on the scanner on-the horizon scanner circuit breaker. Tom Stafford checked this circuit breaker and found he had accidently knocked it off apparently during the EVA preparations. He put the circuit breaker back on and everything settled down immediately. He has the number three thruster back,all modes are operating just as they have been throughout the flight. The knocking off of that circuit breaker completely explains the difficulty encountered in the control mode. We say again he has now - we have now fully explained and understand the control problems that Tom reported over Tananarive. This taped conversation over the Carnarvon Station will explain it to you. Here it is.

S/C Aft is steering away - repeat away from the roll. The pitch is - we put the platform to zero, zero, zero. It's like being in a 180 at R break. You know the way the needles go

CRO Roger

S/C My yaw needle breaks the platform right here/I and have to when the pitch needle is up I have to pitch down to bring it in. When the roll needle is to the right I have to roll left. Looks like that logic is reversed from the roll and pitch.

CRO Okay standby.

Do you copy Flight.

HOU Affirmative

HOU Carnarvon Cap Com, Houston Flight

CRO Go ahead Flight

HOU Will you find out if he is in acme secondary logic?

CRO Roger

Are you in acme secondary logic?

S/C Right. I have a firm reacme , bias power. Primary acme bias power and secondary acme bias power give the same results.

CRO Roger

S/C Now I'll go to secondary acme logic. Okay secondary logic in pitch gives the same as primary. The pitch needle is fly away some when you're zero, zero, zero.

CRO Roger. Do you copy Flight?

HOU Roger. Affirmative.

S/C The roll is the same, quoted in primary or secondary acme logic-makes no difference. The yaw and pitch pardon me - the roll and pitch needles are fly away some at zero, zero, zero.

CRO Roger.

S/C (garbled) plat mode it suddenly spun me up to about I'd say 20 to 30 degrees per second before I caught it direct.

CRO Roger.

S/C I'm now in pulse at zero, zero, zero,or in between plat and attitude and just status quo on the EVA list

CRO Roger, understand

HOU Carnarvon would you - standby one

HOU Carnarvon Cap Com would you ask the crew to check the scanner heater circuit breaker?

CRO Roger. Would you check the scanner heater circuit breaker?

S/C Roger. It was (garbled).....did show

CRO Rog. Run a little test and give us a show here.

S/C Okay, I'll go at the rate command direct reentry rate command - they all appear ok as far as the control modes from the stick

CRO Good show.

S/C Looks like I better knock it off on the EVA prep here.

CRO Do you copy Flight?

S/C We'll check number three thruster here in just a minute

CRO He's yawing left and right Flight

HOU Roger

CRO Pitching up, pitching down

S/C Okay, Gemini 9. I'm in plat mode now zero, zero, zero

S/C and it looks good.

HOU Okay Tom, we'll see you around the next time.

S/C Roger. Good show. We thought about everything but the breaker. I thought that Gene and I had gone through all kinds of control mode checks here. Okay, we're going on with the sequence.

HOU Roger.
Bill does he have number three thruster back.

CRO It was fine. Looked like it. I'll go ahead and ask him, I'm pretty sure he has.

CRO Gemini 9 Carnarvon

S/C Go ahead Carnarvon

CRO Okay you do have thruster three back don't you?

S/C Yes.

CRO Okay

S/C Looks good

CRO Flight Carnarvon

HOU Go Carnarvon

CRO That fuel cell H2 on the print out from my computer reads 240.

HOU Roger
Do you feel awake out there now?

CRO That'll do it to you won't it.

HOU Okay.

CRO Carnarvon has one minute to LOS

S/C Roger Carnarvon and we're on sequence 45

CRC Roger.

CRC Carnarvon has telemetry LOS

HCU Roger Carnarvon

END OF TAPE

This is Gemini Control Houston at 47 hours, 50 minutes into the flight. We have a brief exchange between Gemini 9 and the Houston Cap Com via the Canton station. We'll play that for you first then we'll come back and note some of the events that are planned to take place during the EVA exercise. We have had to develop a special flight plan which has appeared only during the last hour or two here in the Control Center. We'll run through it for you noting some of the highlights we'll be watching for, but first here is the Canton tape.

HOU — Gemini 9, Houston standing by.

S/C — Roger, Houston. It looks like we're all squared away.....we're satisfied.....

HOU — Roger.

S/C — Sorry about that record.

HOU — There'll be days like that.

S/C — garble

And this is Gemini Control Houston. The spacecraft now on the outside edge of the Hawaii acquisition area. We don't expect any additional conversation via Hawaii. Sunrise again for EVA a critical item is noted at 49 hours, 26 minutes. At 49 the hatch is to be opened and Gene will stand up at that time. The first item calls for Gene to jettison and throw overboard some of the unnecessary pouches that contain various pieces of EVA gear. He will first retrieve the S-12 experiment, the nuclear emulsion package exposed on the adapter end of the spacecraft, hand it in

to Tom Stafford. He will then deploy the handrail along the adapter and set up his 16 mm movie camera with a wide angle lens. He'll proceed to the front of the spacecraft. This event to occur at about 49 hours, 30 minutes elapsed time. He'll attach a rear view mirror to the docking bar, the indexing bar, at the front of the spacecraft. He will then do a umbilical and a Velcro evaluation, before returning to the cabin area. He will hand the camera in to Tom Stafford, who will change the film on the EVA movie camera which will be re-installed in its place on the adapter area. Meanwhile, the EVA lights will be lighted and at 50 hours elapsed time the flight plan calls for the handrails and the foot rails to be extended in the adapter area. Within a minute or two Gene Cernan should be in the adapter. He will inspect the entire area,along the way he'll take a good look at the spacecraft. He will make sure that the bars are in place, firmly in place, the handrails and the foot rails. At 50 hours and 20 minutes he will physically enter the adapter and take a pressure reading on his peroxide levels in the Astronaut Maneuvering Unit. At an elapsed time of 50 hours and 25 minutes he is expected to actually don or put on, get into, the AMU - strap it around him. He will immediately proceed with the light warning check, testing the audio signals and the various lights which will serve to him as audio and visual cues to any untoward happening. At 50 hours and 30 minutes, 35 minutes, he's to give Tom Stafford an indication before undocking and uncoupling the AMU from the adapter

area. At 50 hours, 40 minutes into the flight, this would be about 80 minutes into the EVA portion of the flight, the AMU would be undocked. Correction - that AMU deployment would take place at 50 hours and 50 minutes into the flight. At which point he would move out away from the adapter a few feet and run a check on all of his thrusters, translating up, down, forward, aft, roll, pitch and yaw. At 51 hours, he would attach the 100 foot tether to the 25 foot umbilical, and give us a status check on the AMU. He would then proceed forward along the spacecraft. This occurring, approximately, at the end of rev 32 by which time the elapsed time would be 51 hours, 10 minutes. 51 hours 15 minutes, call it. At which point he would be over the Texas station. After a through look at the forward end of the spacecraft and attaching his tether to a holder in the area of the docking bar, he would move out in front of the spacecraft and perform a figure four maneuver, wherein he moves some 80 feet directly forward of the spacecraft. At the 80 foot point he would stop his movement and move in a left direction for, approximately, 80 feet. And then after completing that he would move off for the 45 degree angle again, a flat plane forward of the spacecraft, for some 75 to 80 feet, at which point he should be in the order of a 120 or 125 feet in front of the spacecraft. Then he would make a turn and come straight back toward the spacecraft, thereby completing a figure four or perhaps it might better be described as a pennant if you traced it on a piece of paper. A pennant with the point to the left. At 51 hours,

30 minutes he is to perform a status check and at which point he would be 110 feet out. His mode on the AMU would be a manual mode. He would turn off the automatic system. At 51 hours, 40 minutes he would be back on the umbilical at which point he would jettison the AMU tether, plugging back in to the spacecraft oxygen supply. Immediately after that he will jettison the AMU itself, pushing it down and away. Sunset at that time should occur at, rougly, 51 hours and 45 minutes. And it will be approximately that time that the hatch will be fully opened again. All during this period, during most of this period, the hatch will be only open two to three inches thereby protecting the plastic rubber seal on the inner face of the hatch. Cernan at this point would stand in the hatch and take some dim light photographic pictures of the airglow and other phenomena. And his last EVA act will be to retrieve a 16 mm camera mounted directly behind him. He would enter the hatch, according to our present plans, shortly before 52 hours elapsed time in the mission. The total EVA time budgeted is 160 minutes according to his plan. Call it 156 minutes. We've just come into.....

END OF TAPE

We have just come into contact with the spacecraft by the Guaymas Station and let's tune in now and keep track of this pass as it moves across the states.

Gemini Control here during this period there is no conversation. We have some additional information regarding that scanner heater circuit breaker. We simply identified it as the scanner circuit breaker back when we were over Carnarvon. The item that was giving us trouble was apparently knocked off during the EVA preparations. We credited Jerry Griffin, our guidance navigation control officer here with the solution to that problem. Jerry now passes the credit on to his staff support room. And specifically to James Walker, the McDonnell Aircraft Corporation. It was merely Walker who came up with the solution and passed it to Griffin, the controller, who in turn gave it to the flight director and it was then relayed to the crew. Mr. Walker has been congratulated by George Low the Deputy Director of the Manned Spacecraft Center for his quick thinking. We will return now and try to - we will stand by for any conversation as it develops in this state-side pass.

ARMSTRONG Computer 10, BNC.

GYM Go ahead.

ARMSTRONG I would like to change the low limit on GC01 to 1.1.

GYM Roger.

COM Texas remote. Guaymas local.

This is Gemini Control Houston. One additional piece of information has developed during the roll motion that Tom Stafford reported on over Tananarive pass. It has been calculated that on the order of three pounds of fuel has been expended. We were estimating at that time something on the order 45 to 50 pounds of remaining fuel. Still more than adequate to carry out our maneuvers. Here is some conversation now coming from Gene Cernan.

CAP COM — Go ahead GN

GN — Roger, just wondered if you had any comments on Nancy Baker 01 with this EVA hardware?

CAP COM — It is all right, thank you.

GN — It is okay with you then?

CAP COM — Roger.

S/C — Electrical readout. How about giving me a readout on CA09?

CAP COM — CA09, affirmative.

S/C — Flexible readout.

CAP COM — Go readout.

Okay, I will read it decimal - PCM 146.

S/C — Thank you.

Roger.

This is Gemini Control Houston 48 hours 9 minutes. Apparently we are in for a very quiet pass as the crew continues their EVA preparation. If there is any additional conversation we will come back to it. But at this point we will sign off. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston at 48 hours, 43 minutes into the flight. Tananarive is within the acquisition area for the spacecraft at this time. We expect some conversation remoted from the Tananarive Station with Neil Armstrong here in Houston. Meanwhile we last heard from Tom Stafford via the Kano Station. He reported they were running a little ahead of schedule on their EVA preparations checklist. He reported everything was going very nicely. He also said they were drinking lots of water as per the instruction of the Houston Surgeon. Our Guidance Navigation Control Officer here advises that we should go into the EVA operation with approximately 45 pounds of fuel remaining or a total propellant remaining of 76 pounds. More than adequate for the EVA and the remainder of the mission. We are also pulling presently about 36 amps on the electrical system. This will go up a little bit higher as we move into the EVA, presently showing about 36 amps. Here is the conversation from Canary and Kano.

G/T LOS Grand Turk

HOU Nine, Houston's about one minute from LOS at Antigua.

S/C Roger Houston

This is Gemini 9

HOU Go ahead

S/C Roger it sounds like (garbled) having the relief valve on the ELSS (garbled) release

HOU Say again please

S/C Roger, it sounds like the ELSS relief valve is (garbled) pumping

HOU Roger understand

ANT LOS Antigua

CYI Canary has acq aid contact

HOU Roger Canary

CYI Flight we didn't copy that last air to ground, could you repeat that for us please?

HOU Canary we're probably going to get a clarification on it. I'll be back to you Canary.

CYI Roger

CYI Canary has TM solid, all systems look good Flight.

HOU Roger

CYI Gemini 9, Canary Cap Com
We have you go on the ground. You need not acknowledge. We are standing by.

S/C Roger. We're in sequence (garbled)

HOU What did he say there Canary?

CYI It sounded like sequence 50 Flight.

HOU OK
70

CYI Roger

CYI One minute to Canary Island LOS

S/C Roger Canary. You can tell Houston the cabin pressure relief valve is (garbled)

CYI Roger, cabin pressure relief

S/C In sequence 70

CYI Roger

CYI Flight, Canary. Did you copy?

HOU Affirmative

CYI Roger

HOU Gemini 9 Houston standing by

S/C (garbled)

HOU Houston, Roger

Kano remote

KNO Kano is remote

HOU Gemini 9 go ahead

S/C Roger. We're both - looks like we're a little bit ahead of schedule here and we're fixing to (garbled) up on water. (garbled) reads 2650 when we finished drinking.

HOU Okay thank you Tom

S/C All systems look real good.

HOU Very good

We'll give you that sunrise check at Tananarive.

We're one minute to LOS

Tananarive go remote

HOU Carnarvon Cap Com Houston Flight

This is Gemini Control Houston, 48 hours, 47 minutes. That concluded the conversation via Kano. We are having some spasmotic conversation via Tananarive. We'll bring you those a little later. At Carnarvon the Gemini 9 crew is to be given a GO or a NO GO for a cabin depressurization. A note or two on the warning lights

and tones available to Gene Cernan on his extravehicular equipment. He has six status lights which give him warning of potential or actual problems. They function much like the warning lights on a car. One - the first item is a hydrogen peroxide light, which would come on should the pressure in the hydrogen peroxide or the gas system in the AMU fall below 380 pounds per square inch, within plus or minus 30 pounds per square inch of that value, 380. The hydrogen peroxide presently which has not yet been activated is reading a very constant 85 pounds per square inch which is the expected value and it also shows 71 degrees in temperature. A second light concerning the peroxide quantity would come on should the quantity drop below thirty (30) percent. He has on board 26 pounds of hydrogen peroxide fuel. He also has a gage - all these gages and lights are on the upper part of the chest pack fully in view as he moves about outside the spacecraft. In every case when anyone of these little white lights comes on he also gets a 1700 cycle per second tone. A beeping tone as an added reminder. If he decides its not a real problem he can turn the tone down to the point that its inaudible but he cannot turn off the light. It would remain on and continue - enable him to continue to check it. Tom Stafford would also get that tone in the spacecraft. It would be broadcast through the little transceiver available to Gene with which Gene will communicate with Tom Stafford while he's outside on the tether. A third light will be following the oxygen supply pressure. When the pressure in the bottle on the AMU drops below 800 pounds per square inch within plus or minus 60

it will also - the same light would be activated should the temperature of the oxygen fall - move plus or minus 5 degrees. In a fourth light will monitor the reaction control system in the AMU and would go to white should the RCS power drop below 13 volts. This is a 28 volt system in the AMU. It would also be activated should Cernan be operating in a stabilized mode and in the event that a thruster would fire more than 7 percent of the time. Thus a guard against a stuck thruster. A fifth light would come on if there is a problem of flow in the emergency oxygen bottle located in the chest pack. He's got a thirty minute supply of oxygen in the chest pack which under normal circumstances would not have to be access for other than checks. In the AMU he has a 7.3 pound supply of oxygen which is more than an hour's supply, something in the order of seventy minutes. A sixth light will indicate a drop in suit pressure. Suit pressure is normal during the EVA, EVA exercise at 3.7 pounds per square inch. A light would come on should that pressure drop below 3.3 pounds per square inch, within plus or minus .1 pound. There is a relieve valve in the suit, should the pressure build up over 4.5 pounds per square inch. That covers the six primary warning devices that Gene has and at this time I believe we have a taped conversation of the Tananarive Station and we will play it for you now.

HOU FLt Carnarvon Cap Com, Houston, Flight

END OF TAPE

HOU Carnarvon Cap Com, Houston Flight.

CRO Houston Flight, Carnarvon Cap Com.

HOU Roger. Bill, at this time we're happy with the spacecraft configuration depending upon your air to ground data you can give them a GO/NO GO for egress.

CRO Roger.

HOU I should say depress. Gemini 9, Houston standing by.

S/C garble.

HOU Roger, Tom. Not reading you very well. Let's wait until you get a little more elevation. Gemini 9, Houston, standing by for your message again.

S/C Roger. We'll go ahead with the flight plan .....

HOU Roger.

S/C garble

HOU I couldn't get that. Would you like to have a time hack on your event timer for sunrise?

S/C garble

HOU Okay, it's set up 20 minutes and we'll give you a 20 minute time hack in about a minute and 45 seconds.

S/C Okay. Mark 20 minutes.

HOU Roger. Okay, we're about 15 seconds now to 20 minutes counting up.

S/C Okay.

HOU 3 2 1 Mark. Gemini 9, Houston. One minute to LOS Tananarive.

This is Gemini Control Houston. 48 hours, 55 minutes into the flight. In - while you were listening to that taped conversation via Tananarive, our Flight Director Gene Kranz was in conversation with the Carnarvon station. He told Carnarvon that we were happy with all the readings, all the status of events to this point. He instructed the Carnarvon station to go ahead when they acquire in some two to three minutes to give the crew a go for depressurization. I repeat, he told Carnarvon to give the crew a go for depressurization. This event is to occur over the Carnarvon station, and the actual depressurization would take place between Canton and Hawaii - closer to Hawaii, actually. At 49 hours and 20 to 23 minutes into the flight. The critical time is 26 minutes. That event to take place just a little bit east of Hawaii. This is Gemini Control Houston.

END OF TAPE

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 8:50 AM TAPE 150 PAGE 1

This is Gemini Control Houston 49 hours 10 minutes into the flight. We have been monitoring the heart rates very carefully during this past rev and during this period of work activity they have been running somewhere between 80 and 90. Tom's heart rate when we ecountered that little problem with the roll thruster about an hour and a half ago, jumped up to 105 over the Carnarvon station. But it settled back down immediately. Overnight, both men slept with a heart rate of running between a very low 40 up to 50. Dr. Berry has advised here that he expects Cernan's rate to run on the order of 140 to 160 during the EVA expercise. This would correspond very favorably with that shown by Ed White during his exercise outside Gemini 4. We have some taped conversation now from the Carnarvon station and we will play it for you at this time.

HOU Carnarvon Cap Com, Houston Flight.

CRO Houston Flight, Carnarvon.

HOU Roger we have just talked to the Tananarive contact and they thought that Tananarive was receiving spacecraft whirly on the ground. If the UHF com is pretty poor at your site slightly shortly after acquisition you might suggest they go to UHF-2 and give that a try.

CRO Roger, have a good trip.

S/C (Garbled)

CRO Roger.

HOU Carnarvon, what are you reading inRA03 EVA suit

HOU pressure?

CRO That is off scale low.

HOU Roger.

CRO PSO2 is running about 815 psi, ECSO2 quantity is 53 left right secondary bottles are 5290 and 5260.

HOU Roger.

CRO Flight, Carnarvon.

HOU Go, Carnarvon.

CRO Okay, on the EVA suit pressure coming out of the computer I now read 2.56.

HOU Is that PSI

CRO That is affirm.

Flight, Carnarvon.

HOU Go, Carnarvon.

CRO That is decimal,too.

HOU Okay.

CRO Flight Carnarvon.

HOU Carnarvon Cap Com, Houston Flight

CRO Go ahead.

HOU Roger will you verify or see if the crew has closed their EV visor yet?

CRO Roger. Gemini 9 have you closed the EVA visor yet?

S/C	Gemini 9, negative.
CRO	That's negative flight.
HOU FLIGHT	Roger
CRO	The ECS pressure is down to 791. That's a computer readout flight.
HOU FLIGHT	Roger, why don't you have him pump up the ECSO 2 pressure?
CRO	Roger. Gemini 9, Carnarvon.
S/C	Go ahead, Carnarvon.
CRO	Okay, I'm reading 791 on ESCO2 pressure, do you want to turn your heater on and crank it up? It's up to 810 now flight.
HOU FLIGHT	Roger.
CRO	Flight, Carnarvon.
HOU FLIGHT	Carnarvon.
CRO	Okay, I've got tape motion here, it looks like the tape recorder is running.
HOU FLIGHT	Roger.
CRO	He's got Pump A and both loops up.
HOU FLIGHT	What are you reading now on RAO 3?
CRO	Stand by. Still .2. ESCO2 is back up to 839.
HOU FLIGHT	Roger.
CRO	Flight, Carnarvon.
HOU FLIGHT	Go Carnarvon.
CRO	On this RAO 3, the meter reads essentially 0 but the data keeps telling me its 2.56.

HOU FLIGHT Okay.

CRO I'm getting a PCM count right now.

HOU FLIGHT That's the bottom end of the scale there, Bill, so you're correct in both counts. The meter should be reading off scale low.

CRO Rog.

Carnarvon has LOS.

HOU FLIGHT Roger Carnarvon.

CRO You look good at LOS flight.

HOU FLIGHT Okay, Bill.

END OF TAPE

EVA portion

This is Gemini Control Houston, 49 hours 23 minutes into the flight. We are listening to the crew via the Canton station. They have advised at 49 hours and 19 minutes Stafford reported that he was depressurizing and the cabin was showing about 3.5 pounds of pressure -- or less than that. At 49 hours and 22 minutes, about a minute ago, Cernan reported we are opening the hatch and we will start playing this conversation as it happens..

S/C	.....(garbled conversation between Cernan and Stafford).....
S/C Cernan	My heel caught on something, couldn't see it. That's all right I'm allright now.
S/C Stafford	Okay.
S/C Cernan	It sure is beautiful out here Tom. If I had my Hasselblad I'd take a picture of that.
S/C Stafford	Okay.
S/C Cernan	I can't turn around fast enough.
S/C Stafford	That figures.
S/C Cernan	Fifty feet out now, I'll be transferring.back.
S/C Stafford	Fifty?
S/C Cernan	Okay. I tried to grab a hold of the rail behind .....(garble).....bukket of bolts..... I tried to install.....ah, the hand rail in the back is out. I don't know Tom, but I may be able to get this one.
S/C Stafford	Uh-huh.

S/C Cernan — Yep, I got that one.

S/C Stafford — .....(garble)....suit pressure?

S/C Cernan — I can't see it its too dark out here.

S/C Stafford — I don't.want it. Let's hold it. Keep the visor down for the present

S/C Cernan — Okay, the visors down now Tom.

S/C Stafford — Okay. Check the gain levers now.

S/C Cernan — Okay, its checked. Okay, I'll check again, but I already put them there Tom.

S/C Stafford — Okay.....(garbled).....

S/C Cernan — Stand by, wait a minute let me check these. Up and no.....(garbled).....

S/C Stafford — Real good.

S/C Cernan — Why float out?

S/C Stafford — Yeah. .....(garble)...jettison overboard, don't keep it.

S/C Cernan — It's a little bit dark yet, Tom, Let me see.

S/C Stafford — Roger, stand up now.

S/C Cernan — Pressure is holding about 3.9 right now.

S/C Stafford — Okay, I'm holding.....(garbled).....

S/C Cernan — Okay, turn on the medium flow and very comfortable.

S/C Stafford — Real good show. .....(garbled)....

S/C Cernan — Okay, I'm turning around and trying to get the S-12 now, Tom.

S/C Stafford — Oh good.

S/C Cernan — The sun sure is bright. (rough?)

S/C Stafford — Boy, I guess it is.

S/C Cernan — Pull my leg down, Tom.

S/C Stafford — What one?

S/C Cernan — That one.

S/C Stafford — Yeah, okay.

S/C Cernan — Hook it under the instrument panel, I'll keep from coming out. Okay, the pressure still seems to be holding at 4. ....(garbled).... still seems to be nominal right now.

S/C Stafford — Roger, pressure 3.6.

S/C Cernan — Okay, the S-12 [illegible] lanyard is on.

S/C Stafford — Right.

S/C Cernan — Here comes the S-12, Tom.

S/C Stafford — Okay.

S/C Cernan — Just a minute.

S/C Stafford — I got the S-12.

S/C Cernan — Okay, I'm leaving go.

S/C Stafford — ....the hand rails.

S/C Cernan — The hand rail is deployed.

S/C Stafford — Okay, good, are you coming?

S/C Cernan — Okay, I'm trying to get them out, Tom.

S/C Stafford — All rightee.

S/C Cernan — It's a long way back to that hand rail.

S/C Stafford — Is it?

S/C Cernan — Okay, keep it holding, Colonel.

S/C Stafford — Okay, I've got you.

S/C Cernan — Pretty much of a bear to get at this thing because the hand rail is so far back.

S/C Stafford — Oh.

S/C Cernan — Pull me back down.

S/C Stafford — I'll pull you back down.

S/C Cernan — Okay. Pull me down some more.

S/C Stafford — Okay?

S/C Cernan — ....(garbled)....Pull me back a little more. I don't see anything waving off the adapter from here.

S/C Stafford — Good show.

S/C Cernan — I put my Hasselblad around a little bit.

S/C Stafford — Okay, want to hold it?

S/C Cernan — Got the camera now let me check the settings again, Tom.

S/C Stafford — Okay.

S/C Cernan — Six frames per second, 1/200th, f-16.

S/C Stafford — Roger.

S/C Cernan — Strange world out here you know it?

S/C Stafford — Yes.....(garbled).....

S/C Cernan — .....(garbled)....I had it in but it wouldn't snap down.

S/C Stafford — Okay, try it again.

S/C Cernan — Pull me down?

S/C Stafford — Okay.

S/C Cernan — That was a hard fit, but its in.

S/C Stafford — Okay, that's good.

S/C Cernan — Okay, let me turn around before .....(garbled)...

S/C Stafford — All right.

S/C Cernan — Pull that leg down.

S/C Stafford — I got you.

END OF TAPE

This is Gemini Control Houston. Gene Cernan is going about his duties in a very business-like way. It sounded to us here on the ground the communication a little choppy to start with. It improved as we moved through the center of the Hawaii circle and we lost the acquisition about a minute ago. We should pick them again in about two minutes via California. At 49 hours and 26 minutes elapsed time, Gene did retrieve the S-12 micrometeorite impact emulsion dish. He also deployed the hand rail about two minutes later, and he noted that it was quite a distance back to the hand rail. He seemed to have a little trouble setting up his EVA 16 mm camera and now we have re-acquired via California. Let's go back to the spacecraft.

S/C ...control power. Okay let me take a breather here now. Okay. Everything wants to line up the ELSS wants to line up in my face everything I let go goes up.

HOU Houston standing by.

S/C Roger.

HOU Okay.

S/C ...reset and I know you are, boy. You have got a beauty coming. Houston, Gemini 9 testing the vox, how do you read me?

HOU We are reading you loud and fairly clear Tom.

S/C Aren't you reading ... vox too?

HOU Roger, you are clipping a little bit Tom, but we are getting most of it.

STAFFORD ...and he is taking a break here to relax. He is taking a couple of pictures standing in the seat and we will be going on the flight plan shortly.

HOU Very good.

STAFFORD Sure would help the break in short order if I could have a cup of coffee.

HOU Okay.

STAFFORD Bet Dr. Gilruth and George Low/and probably Chuck Mathews are having one about now. (pause) Neil, it looks like the bird is coming up now on Baja California. It looks as if that weather is rough, then I have got a couple of islands down here.

HOU Yeah, that is right, Tom.

STAFFORD Okay, Gene feels real good on that ELSS now. The temperatures are good and our suit pressures are holding real good.

HOU Roger.

CERNAN Okay. (pause) about two one minutes, Tom. Okay you want to pass the umbilical out, is that what our next step is?

STAFFORD I will pass it up.

CERNAN Whew! Hey, we are coming right over LA, I think.

STAFFORD (Garbled)

CERNAN I can see, I can see Edwards, I can see the islands.

STAFFORD I got it, we will have to do ... on it. (Pause)
See the F-4 near the runway?

CERNAN Yep.

STAFFORD That is a little thing the Air Force built...

CERNAN Okay, can you see ... now or what?

STAFFORD (Mike keying and garbled)

CERNAN I see...

STAFFORD Okay, good....

CERNAN ...did you get it?

STAFFORD (Garbled)

CERNAN I got worlds of good shots of LA,/and aircraft Baja
California.

STAFFORD Yeah. Look up China Lake bed.

CERNAN Okay, can you pull that in any more? ...okay.

STAFFORD That is about it (garbled)

CERNAN Do what?

STAFFORD (Garbled)

CERNAN I can't ... up here.

STAFFORD (Keyed out)

CERNAN Spell it out and give it to me.

STAFFORD (Garbled)

CERNAN Got a picture of Baja right here.

STAFFORD Okay....Gene is taking a picture of Baja California we will get .....

HOU Houston roger.

CERNAN ...goes up Tom?

STAFFORD Yeah, here they are here.

CERNAN Okay

STAFFORD (Garbled)

STAFFORD Okay wait a minute now.

CERNAN Take it a little bit slower on your ... panel

STAFFORD (Garbled)

CERNAN Yeah, mine is holding good.

STAFFORD .....real comfortable....

CERNAN Okay, you had better give me the docking bar...

STAFFORD (Garbled)

CERNAN (Garbled)

CERNAN Boy, that snake is really running around out here.

STAFFORD Twelve minutes, 30 seconds (garbled)

CERNAN Okay, I am going to see if I can get out here, Tom....

STAFFORD Okay....(garbled)...go on out for a bit.

CERNAN .....when you were leaning forward.

AFD Texas remote, California local.

TEX Texas remote

CAL California local.

CERNAN I can't get there unless I come down a little bit.

STAFFORD (Garbled)....okay, he is down now. (mike keying)....

CERNAN Hello spacecraft ...

STAFFORD (Garbled)

CERNAN Looks like both ....(garbled)

STAFFORD You look pretty out there, Gene. Sure trying to float up, though.

CERNAN Yeah.

STAFFORD (Garbled) (pause) like you are upside down and the other (garbled) (mike keyed)

CERNAN ...go there, if I can get over here and make a picture, Tom ...(garbled)....I am sorry, it is really hard to get any torqueing when (garbled)

STAFFORD Yeah (garbled) looks like you are going to fly right off that thing. (garbled)

CERNAN (Garbled) (pause)(mike keying) how about smiling (mike keying) ... come/on you, smile.

END OF TAPE

STAFFORD garble

CERNAN Okay, Tom.

STAFFORD garble

CERNAN .....to the left. To my left, Okay?

STAFFORD To your left.

CERNAN Okay, I though it was to your left.

STAFFORD .....on the ground signal. Let me know if you get near to those thrusters.

CERNAN Yeh, I don't know where I'm going right now so hold on a few seconds. I'm getting near it, Tom.

STAFFORD Okay, let me know when you get on the adapter. You may be able to hold on there. Did it come off?

CERNAN Stand by. I'm okay. The snake's all over me.

STAFFORD What?

CERNAN Snake's all over me, Tom.

garble, garble

CERNAN If I can swing out I'm going to try to get out of here by playing out the umbilical.

STAFFORD Okay.

Garble, garble.

CERNAN I'm going to hitch off. Okay, Tom, here I go.

STAFFORD That's it. Okay, Gene, real good. It looks like the umbilical by itself is a pretty bad way

.....

STAFFORD .....slowly from our left. I'm taking pictures.

CERNAN I can't get over, Tom, to get where I want to get.

STAFFORD All right.

CERNAN If I can get started in a certain way I'll be all right.

STAFFORD All right.

CERNAN Okay, Tom I'm going to stand by here.

STAFFORD Okay. I can see you in the dark ..... the .....is working real good.

CERNAN Okay, I'm near the aft thrusters, Tom.

STAFFORD Okay, ...shall I turn them off?

CERNAN Okay, you better turn them off.

STAFFORD Thrusters off. ....I'm going to take a picture of you through the mirror.

CERNAN Okay, I'm outside now.

STAFFORD You look real fine.....

CERNAN Okay, I'm going further outside, Tom. Oh, what a beautiful spacecraft, golly.

STAFFORD I just got .....here

CERNAN I'm going to try and get out in front of you where I can get a good evaluation of the pod and the umbilical.

STAFFORD Okay.

CERNAN I'm going to get over on your side and evaluate the Velcro pads, Tom. Okay, I'm just about through with the adapter.

STAFFORD Okay, I'm in pulse mode. ....through with the thrusters. Okay, I'm ready for your reports.

CERNAN Okay, I'm still here and I'm going to start using one of those Velcro pads. I lost it,

CERNAN it came right off my hand.

STAFFORD garble

CERNAN Say again.

STAFFORD garble

CERNAN I got you a little better. I still want to evaluate these hand pads, if I can. Okay, I'm stuck on this thing with a hand pad right now, but they won't stay. Velcro is not strong enough here.

STAFFORD Velcro won't hack it, huh?

CERNAN It looks better here. I must say it's nose is burnt off slightly.

STAFFORD Are you going back on the adapter again?

CERNAN Yep.

STAFFORD Okay. Where are you?

CERNAN Right outside your window. I got a picture of you.

STAFFORD Try to put some pressure on the spacecraft, Gene.

CERNAN The only control I have is the umbilical. The shorter it is the better control I have.

STAFFORD garble

CERNAN Okay, Tom, put me down. I'm ready to go out here now, if I can. Away from you. Right out in here. Okay, I'm at the end of the umbilical. Garble, garble.

This is Gemini Control. During this period Cernan's suit pressure has run a very constant three point seven pounds. Stafford's suit pressure 3.6. Stafford's heart rate has been a very steady 90. Cernan's

has oscillated some, running fairly close to 155 during work period. He notes the shorter the umbilical, the more control he has. At one point he referred to having snake all over me. This is a nickname the crew has give the umbilical. They're talking again as we pass over the Florida coast.

STAFFORD — GARBLE Come out in the sun while I get a picture of you. Come out in the light.

CERNAN — I've shortened the umbilical. It works better on me now. I'll try this other hand pad but so far it doesn't look like it's stiff enough.

STAFFORD — All right. Shorten up on your.....

END OF TAPE

STAFFORD Shorten up on your umbilical if you don't want ....(garbled)

CERNAN Roger, that'll be good.
There goes that other hand pad. I couldn't keep up on it.

STAFFORD Okay, understand the velcro isn't (lost transmission)

CERNAN And one ...came right off in my hand

STAFFORD Okay.
(PAUSE)

STAFFORD Gene .... bar mirror is really a fine piece of gear I can see you real well.

CERNAN Okay Tom I'm coming back by the hatch here for a second. What time is it?

STAFFORD Okay about 24 minutes after sunrise.

STAFFORD On your last roll you didn't get anywhere with your umbilical, and any .....(garbled).

CERNAN Yep.
(PAUSE)
Your switch is goodfor (garble) (pause) I don't have any torque capability.

STAFFORD I'll run your signals by hand here and I'll see what I can do for you.
(PAUSE)
How's that?

CERNAN Give me six more ....a little bit (Next transmission garbled)

STAFFORD OK Gene ease around here and take a rest.

CERNAN OK

STAFFORD Houston, Gemini 9, how do you read?

HOU We're still with you Tom.

STAFFORD OK. Gene's done the umbilical evaluation and it looks pretty rubbery out on the (garble) I've got him back of the cockpit now and can see him real well with this docking bar mirror. Our suit pressures are holding good. We're both looking for Ascension standby for confirmation.

HOU Roger we got that

HANEY This is Gemini Control Houston, the crew seems to be following very closely the flight plan sketched out for you about an hour ago. Cernan is back in the area of the cockpit and they're about ready to change the camera film. We're on the far eastern edge of the Bermuda acquisition zone which overlaps with Antigua. If we get some additional conversation we'll go right back there. Several times we've heard Cernan refer to the fact that he had no torqueing or roll ability with the umbilical. Of course he does not have a handheld maneuvering gun as did Ed White. He does note a tendency to float upwards above the spacecraft with the umbilical, which

corresponds very closely to the experience with White. Let's go back now to the conversation.

CERNAN Do you want the film out of the camera?

Next transmission is garbled

CERNAN Okay it's still running. (Referring to the camera)

Next tansmission is garbled

G/T Grand Turk LOS

Next transmission is garbled

CERNAN .....little low in spots

HOU Gemini 9 Houston, let's take a check on that primary tank pressure now. Just bump it up.

Next transmission is garbled

ANT Houston approaching LOS

STAFFORD I've got the thermal cover all squared away for you Gene.

CERNAN Okay would you give it to me?

This is Gemini Control in Houston. Just as we bagan to talk Antigua lost the signal with the spacecraft. Ascension will pick it up at 50 hours and one minute into the flight. We presently read 49 hours, 57 minutes. The crew noted that they had changed the film in the EVA camera. Stafford noted at the end of that conversation that he had jettisoned the thermal curtain which protects the AMU device in the after-end of the adapter. He's also illuminated the EVA lights. They are now, or in about 20 minutes, will be moving into a night area. The flight plan calles for Stafford to extend the hand rails and the foot bar in the adapter area which Gene will be braced against when he dons his astronaut

maneuvering unit. Meanwhile Cernan is to move to the adapter area and inspect the area generally and look at any strap hangings that might be part of the separation from their Titan booster. He didn't note any earlier. We had a very brief report there. He didn't see a lot of straps as we saw on the Gemini 6 spacecraft. He will test the bars - the hand rails and the foot rails - to make sure they are securely locked in place, and he is to enter the adapter at 50 hours and 20 minutes into the flight or right about sunset with the spacecraft over Tananarive. Once in the adapter the first check he will make with the AMU is to check the pressure on the hydrogen peroxide reading and he will check this with Stafford who also has a cockpit read-out. Here on the ground the Flight Controllers are looking at their various readings and they are all giving very favorable reports to the Flight Director. The doctor notes that Gene Cernan's heart rate toward the end of the stateside pass had dropped down to the order of 125 beats per second, an indication that he is adapting very nicely to space walking.

END OF TAPE

HANEY ....we are presently showing 50 hours even into the mission, Ascension should acquire at 50 hours, one minute and 58 seconds. We'll come back when they do acquire the spacecraft. This is Gemini Control Houston.

ASC Ascension AOS, UHF promoted.

This is Gemini Control Houston again. Ascension has reacquired the communication is a little choppy, but let's listen.

S/C (garbled)..hatch down.

CAP COM Roger.

Tom, can you see whether the tape recorder power circuit breaker is on or off on the right console?

Stafford ...on.

CAP COM Ok.

Stafford As soon as we are in position we'll radio the swivel switcher for you.

ASC Ok.

Stafford How's it going there, Gene?

Cernan If I get closer it pulls the hatch.

ASC Roger, spacecraft.

ASC Gemini 9, do you expect to proceed with (garbled).

Cernan ....spacecraft, I'm coming around.

Stafford ...space (garbled), pull it a little, pull it a little.

ASC .....catch.....on the hatch area.

Stafford We see it.

Cernan Its pretty close, Tom.

Stafford] You'll have to watch that.

Cernan	Ok, (garbled) laying out there.
Stafford	Ok. Be sure.
Cernan	(garbled) crawl back in there.
Stafford	Ok, it it goes real easy we'll slip it the wide stroke.... original (garbled).
Stafford	The hatch is pretty stiff out here in the open position, if you can hold it back 10 to 20 degrees we might be able to do (garbled)
Cernan	Its going all the way, go ahead.
Stafford	No problem.
Cernan	Did you pull the hatch any further?
Stafford	I want you to pull, Gene.
Cernan	...or 10 inches, ok.
Stafford	Ok.
Cernan	Back here on the adapter you had better cut the thrusters off.
Stafford	Ok.
Cernan	I'm back here close to the hatch, hold on there while I blow those EV bars.
Cernan	(garbled) you got the thrusters off, don't you?
Stafford	Roger
S/C	Garbled
ASC	Say again.
S/C	He's proceeding (garbled)
ASC	Are your thrusters off?
S/C	(garbled) do a lot...maneuvering
Stafford	OK, stand by, mark for off.
ASC	Ok, now you better go ahead and....
Stafford	(garbled)

Cernan	(Garbled)....but I didn't see any yet.
Stafford	Don't go wrong.
Cernan	Thrusters off?
Stafford	Yes, they are both cold.
	(Garbled) There it is.
Cernan	Okay, it's fifteen. I think I can get it off now.
Stafford	He seems to be very concerned about this.
Cernan	(garbled) is his primary concern.
Stafford	That's so.
Cernan	.....space...I.....pitch...roll
Stafford	...roger
Cernan	Yeah, I just pulled it open ('em?)
Stafford	Have you got the valve covers?
Cernan	Yeah, I just threw it away
Stafford	Good, good..did you get the adapters up?
Cernan	...Let me get these hose up
Stafford	Roger, let me know what the status is.
CAP COM	Houstons approaching LOS Ascension
ASC	Roger, he's turned thrusters off, turn off all
	the ...on the.. time....(garbled)
CAP COM	Houston, Roger.

This is Gemini Control Houston. Communications are, as I am sure you are noting garbled. We can catch about every third or fourth word. We did gather that Gene was moving to the area of the adapter to inspect the separation plane between the adapter and the second stage of the Titan. Once he passes the adapter edge he will make

a very careful visual inspection of the AMU, insuring that the bars are in place, the foot rails and the hand rails and he will check his reaction control system handles very carefully on the AMU before moving on with the flight plan. We presently read 50 hours and 10 minutes. The crew has consistently stayed right with the flight plan as written. We expect sunset to occur in the Pretoria area at 50 hours and 16 minutes into the flight at which point Cernan is to enter the adapter area. Our next acquisition is slated for 50 hours and 13 minutes through Pretoria, South Africa and followed by an acquisition at Tananarive at 50 hours 18 minutes. It is unlikely that we would have any voice communication coming back from Pretoria. I think it will be monitor, a ground monitor only situation. This is Gemini Control Houston.

END OF TAPE

HOU — Voice control, Houston Com check.

Voice control.

HOU — Mike remote control with Tananarive, please

VOICE CONTROL — Go ahead.

TAN — This is Tananarive.

HOU — Roger. Stand by for quick remoting check.

TAN — Okay.

This is Gemini Control Houston. During this interlude between stations let's check the temperatures and pressures existing in these two suits. In Stafford's suit the pressure at last reading which was Cape down range reading shows 3.67 pounds per square inch. In the right suit, the EVA - Cernan's suit - the temperature is running 54.7 degrees. The pressure 3.73 psi. Meanwhile, the AMU hydrogen peroxide the gas fuel, which has not yet been activated - the system still is inactive until Tom Stafford turns the switch in the cockpit - that reading shows a very steady 85 which it has run since the beginning of the flight. The peroxide temperature is 71 degrees. This is Gemini Control Houston.

Tananarive go remote.

This is Gemini Control Houston. The Tananarive communicator has just been advised that his station is remoted. We expect some contact here momentarily. We presently show 50 hours, 18 minutes into the flight. There's Tananarive coming in, almost right on schedule. Tananarive confirms acquisition. The signal from Tananarive is even choppier than that from Ascension. It is completley unreadable. There is communication coming, however. Garble.

END OF TAPE

This is Gemini Control Houston as best we can understand Tom Stafford and Gene Cernan are going through their check lists, preparatory to donning the Astronaut Maneuvering Unit.

TAN — Houston, this is Tananarieve.

HOU — Stand by Tananarieve.

Tananarieve go ahead.

TAN — ECS 46%, do you want the cross feed open?

HOU — Negative, the answer is negative.

Tananarieve com tech, this is Houston. Would you verify that reading 46%? 46% is that correct?

TAN — This is com tech, Tananarieve, that is affirmative.

S/C Stafford — Tananarieve we have to keep at high rate to keep the pilot comfortable.

TAN — You have to keep at high rate to keep the pilot cool. Is that correct?

S/C Stafford — Affirmative.

TAN — Houston, this is Tananarieve.

HOU — Go ahead, this is Houston.

TAN — Roger, the pilot says they have to keep at high rates to keep the pilot cool.

HOU — Roger, understand.

TAN Tananarieve has LOS.

This is Gemini Contron Houston. Its doubtful whether you can understand much of that conversation. It was extremely garbled. Probably the most garbled pass we've had during the mission. In any case, we did manage to decipher here that Stafford reported he was using the high rate of oxygen flow in order to keep the pilot cool. The temperature on Gene Cernan's suit is still 54.7, his pressure 3.73. We had expected to use the 02 high rate, the oxygen high rate system during this period and it should be cooling off just about as they go through their sunset. Cernan, outside the spacecraft, will see a drop in temperature on the order of 3 to 400 degrees as he goes from a sunless to a black night. The onboard oxygen supply shows 46% remaining and they still have an option here, if they'd like, they can open a cross feed valve and bring in -- introduce -- the fuel cell oxygen supply, making it common to both the breathing oxygen as well as the oxygen required to operate the fuel cell. This request was passed on to Houston -- the suggestion that perhaps they should go to the cross feed valve and the answer went back in the negative. We would like to keep them on the onboard supply oxygen for this time. Carnarvon will the next station to acquire. That acquisition to come at 50 hours, 34 minutes into the flight. We're presently reading 50 hours, 29 minutes into the flight. Acoording.....

END OF TAPE

....and according to our flight plan Gene Cernan should be putting on, getting into the AMU, strapping it about his waist at just about this time. The - once he has gotten into it he will go through a light and wiring test - light and signal warning test excuse me. Once that is completed he will take a two to three minute rest. Following the rest period he will go through a visual acuity check to see what kind of stars he can see through his - with his EVA visor - his special gold plated visor in the up position and the down position. He is due to give a rather complete pilot status report at 5 hours and 34 minutes to Stafford. By Carnarvon they will be ready to go for the undocking of the Astronaut Maneuvering Unit. That event to take place about 5 hours and - 50 hours and 38 minutes into the flight - at 50 hours and 30 minutes into the flight. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. Gemini 9 has tagged up with the Carnarvon Station. The ECS quantity is showing 42 percent which on the nominal. Tom Stafford reports that Cernan is encountering some fogging up of the visor. They are keeping the high rate 02 flowing in order to reduce this fogging. Cernan also noticed his pressure reading gage on his arm is fogging slightly also. They report their having a little more difficulty then expected in deploying the attitude control arms on the AMU. Cernan's words were "they didn't work out - their not working out just as they did in the simulations." We have some conversation , it is extremely choppy. All we're catching is the last word from Stafford and the first or the last word from Cernan but here is the way it sounds.

CRO	Carnarvon is standing by
CERNAN	I got news for you, the oxygen pressure is at zero.
STAFFORD	.....(garbled)
CERNAN	(garbled)
CERNAN	The gage isn't opened yet, so lets see what happens.
STAFFORD	OK
	Open.....(garbled) valve
CERNAN	garbled
CRO	Carnarvon is standing by
S/C	.....garbled.....
CERNAN	.... this visor is sure fogging up.....garbled
CERNAN	I've got the battery switch to go.
	Okay battery switch on.

CERNAN My pressure reading is fogged up, my visor is fogged up.

STAFFORD Leave it on Gene.

Carnarvon, Gemini 9

CRO Go ahead 9

STAFFORD He's fogging real bad.....garbled.....keep the fogging down to a minimum and he got the attitude controller arms and the maneuver controller arms out but it was far more difficulty under zero g then they did in the simulations.

CRO Roger

STAFFORD His pressure gage is fogged and his visor is fogged.

CRO Roger. You copy Flight?

HOU We read it.

STAFFORD Houston our ECS quantity is 42 percent

HOU Roger understand

That quantity is right on the nominal.

S/C How are you doing Gene?

CERNAN It's really fogged up Tom.

STAFFORD I'll leave it at 350 ....garble....Let's take a rest.

CERNAN ...garble...feeling, I believe we're sidewa/s.

STAFFORD Yea. Garble, garble.....

Carnarvon this is Gemini 9

CRO Go ahead 9

STAFFORD ....garble...builds up a heat load so the only one we have hooked up is the 125 foot. He's still hooked to the umbilical.

CRO Roger understand Carnarvon coming up on LOS

CERNAN OK Tom I'll go ahead and make the electrical changeover

STAFFORD Roger. Carnarvon we're going to make the electrical changeover. He's had a little bit of a rest. His BFO2 is 41 percent relay that on to Houston. We'd like to have a recommendation from them when we get to Canton.

CRO We're real happy with that Tom.

STAFFORD Ok real good

CRO Carnarvon has LOS

This is Gemini Control Houston. Immediately after the Carnarvon pass we had the following report from the surgeon. He said coming into the Carnarvon area Gene Cernan was showing a heart rate of 160. At loss of signal from that station at that station he read 135. He said the command pilot has been running a very steady 85 as a heart beat and he pronounced the two of them in good shape. Cernan is continuing to hook up the various connections that he must make on the AMU. At last report he was plugging in the electrical system. We're presently showing here 50 hours, 48 minutes into the flight. At this time he should have had - should have hooked up all of his oxygen and electrical connections

and made the preliminary checks on those. The next sunrise is set for 50 hours, 50 minutes into the flight. It will occur before the crew reaches Hawaii. If they are still right on the flight plan as they have been to date, they will have deployed the Astronaut Maneuvering Unit before we acquire at the Hawaii Station. That acquisition is to come at 50 hours, 59 minutes into the flight. A ship, the range tracker slightly west and south of Hawaii should get some communication from the pair however, about three minutes earlier at 50 hours, 56 minutes into the flight. We're a little puzzled by Tom Stafford's repeated concern over the oxygen quantity. We show this as exactly nominal following the flight plan curve. I'm sure we'll cover this in more detail over Hawaii and over the next sweep across the states. At 50 hours, 49 minutes into the flight this is Gemini Control.

END OF TAPE

GEMINI 9A (2) MISSION COMMENTARY, 6/5/66, 10:36 A. M.

This is Gemini Control Houston, 50 hours, 56 minutes into the flight. Gene Cernan now has been extra-vehicular for slightly more than an hour and a half. We put it at about 94 minutes since hatch opening. At one point during the Carnarvon pass, he brought several of us up short when he reported, I've got news for you. Our oxygen quantity reading is zero. And then he quickly noted he had not energized the switch on the side of the AMU which makes the oxygen flow. He did have some difficulty with the switch but once he did get it switched, it flowed very nicely and it showed the proper reading. The people in one of the back rooms here in the Mission Control Center are monitoring very carefully each of the extra-vehicular systems, are entirely satisfied with their operation to date. There is a question about the fogging that Gene mentions that, perhaps, he did not have his EVA visor down over his normal suit visor which might account for some of it. As we come up on another sunrise we're quite certain he will have his extra-vehicular visor in place. The Range Tracker is standing by for any communication that may come along now. And, we're listening closely for that. Apparently, we will not have communication through the Range Tracker. The Hawaii station should acquire about one minute from now. We'll come back then. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. We've heard from Tom Stafford via Hawaii. We show presently 51 hours and one minute into the flight. Stafford reports that the pilots visor is still very fogged over. He said also that the communications from Cernan is extremely poor. He describes Cernan's communication as a "loud gargle." Tom also said that the work involved in getting the AMU ready for deployment is some four to five times more difficult, more work, than had been estimated. And he said Cernan had been resting. They had not deployed the AMU and Stafford says that if the fogging condition doesn't improve within the next few minutes, they're seriously considering calling the AMU no-go. He has relayed all this to Houston. It's being considered here now. We're prepared to play this tape for you at this time.

S/C Houston, Gemini 9.

HOU Houston, here, Gemini 9, we're reading you pretty weak, go ahead. Gemini 9 Houston, go ahead.

S/C Hello Houston, Gemini 9.

HAW Gemini 9, Hawaii.

S/C Roger, Hawaii, I want you to relay to Houston for me.

HAW Roger, go ahead.

S/C About four or five times more work than what we anticipated. The pilots visor is completely fogged over, nearly frozen over. Gonna let him stay there

S/C STAFFORD and just relax. .....(garbled)...communications are very poor. He has a loud gargle. Everything's .....(garbled) I can barely read him. Also, the attitude control arm is not.....(garbled)... completely. If the situation doesn't improve, or if there is any trouble getting the restraint harness hooked up, I would call it a no-go on the AMU. Let him stay there and rest for a while.

This is Gemini Control Houston, Stafford has just been on the line and he says that he has decdied the situation is no-go -- no-go for the AMU. He says Cernan's visor is still fogged over. He also says the transmitter from the AMU is so garbled that he has great difficulty in reading Gene and he has directed Gene Cernan to switch back to the spacecraft umbilical and they'll take another look at the situation. This is Gemini Control at 51 hours and four minutes.

HAW Flight, Hawaii.

HOU Go ahead, Hawaii

HAW He says he's getting extreme fogging on his visor and its trying to freeze up. And also, that he is having quite a bit of trouble reading him, that the pilot was fairly garbled. He has made the election.....(garbled)....

S/C STAFFORD .....(garbled).....the right hand hatch. It is fairly free for my length of reach for the first couple degrees.

HAW Roger, you say the right hatch moves freely.

S/C Stafford — Right, of course it moved freely when it became near closed. When it was opened is when it was real stiff. It's still pretty free as far as I can push it up and down.

HAW — Roger, understand.

This is Gemini Control Houston. Gene Cernan is back on the spacecraft umbilical now. And he's back in communication with us. There was a period there during Hawaii when he was trying to transmit over the AMU transmitter and of course, these transmissions go only to Stafford and are not relayed to the ground. That would account for the lack of his voice and of Stafford only transmission. This is Gemini Control standing by.

S/C Stafford — Can you see out at all, Gene? Can you read me okay, yes or no? Okay, your transmission was awfully garbled. Okay, did you get the word? I say it's a no-go, its still fogged up and can't get the Attitude controller arm stored on the restraint harness. 'Cause you can't see it now, switch back to the spacecraft electrical umbilical. Hawaii, Gemini 9.

HAW — Gemini 9, Hawaii.

S/C — No-go for the AMU. The pilot's fogged up completely The AMU transmitter is so garbled I can barely read it. The attitude controller arm will not install to the proper position. And I want him to switch back to the spacecraft electrical umbilical.

HAW — Okay, we have that. Roger and we concur in the no-go.

S/C — He has to expend four to five times more energy than what we .....(garbled)....and .....in Zero G in the airplane.

Haw — Roger, understand and Houston agrees in the no-go.

S/C — Roger.

HOU FLIGHT — Hawaii Cap Com, Houston Flight.

HAW — Go flight.

HOU FLIGHT — If you get a chance, you can ask them to see if he can get some sunlight into the adapter area.

HAW — He said that he was attempting to get the sunlight on him now.

HOU FLIGHT — Okay.

S/C Stafford — Hawaii, Gene said to pass on that he hated to do it but he doesn't have any choice and neither do I.

HAW — Roger, we understand.

Flight, Hawaii.

HOU FLIGHT — Go Hawaii.

HAW — Okay, he's back on spacecraft umbilical, now, we have TM back.

HOU FLIGHT — Okay.

S/C Stafford — Let me know when you get ready to switch back to the electrical umbilical, Gene?

S/C Cernan — Okay.....(garbled).....

END OF TAPE

This is Gemini Control Houston, 51 hours, 8 minutes into the flight. At last report, Cernan said he still had approximately 75 percent fogging condition on his visor. And, while the situation is still in some doubt, it does not appear that the AMU will be used during the mission. There going to have another re-evaluation as we move into the California area of acquisition. We are acquiring now at California. Let's stand by. Hawaii has LOS.

HOU Roger, Hawaii.

HAW Sorry about that AMU.

Garble from spacecraft.

STAFFORD Hello, Houston. The .....is pretty high overhead. The view is still fogged over.

HOU Okay, Tom. We're reading you loud and clear now.

STAFFORD We called it quits with the AMU. We had no choice.

HOU We concur.

CERNAN ....the camera out.

STAFFORD Still foggy?

CERNAN About 50% fogged over.

STAFFORD Roger, you're through with....

CERNAN Did you get this?

STAFFORD Yes, I got it. What about for the ....Do you think it's going to fog when you ... garble.

CERNAN How much time do we have to go to night side?

STAFFORD — I don't know, we've got a little farther yet.

CERNAN — Okay, garble...I'm staying fogged right now.

HOU — Tom, this is Houston. You might have Gene check his emergency bottle pressure when he gets a chance

STAFFORD — Roger. We will. He's on high rate, Neil, and he's still fogging.

HOU — Roger, when he can see well enough to read that bottle pressure, we'd like to get an idea what it is.

STAFFORD — Roger, will do. Gene, can you read your emergency bottle pressure on the...

CERNAN — Yes, it's about 6800.

STAFFORD — Houston, did you copy, 6800?

HOU — Yes, very good.

CERNAN — Say, it looks like there is an airplane in the contrails down there.

STAFFORD — Can you see out good?

CERNAN — Yes, I can see right through my nose, but I can't see in front of my eyeballs.

STAFFORD — We're coming up to LA. I've got the frost free....garble.

HOU — Yes, that's some kind of a first, Tom.

STAFFORD — I have to agree with you.

CERNAN — Hey, Tom, what's that guy doing with a Texas license out there on a California highway?

STAFFORD — Which highway you talking about, the freeway? The Golden....

CERNAN — That guy on the motorcycle.

STAFFORD — Oh, the Golden State freeway.

CERNAN — Yeh.

STAFFORD — Okay, Gene, how much can you see out now?

CERNAN — Okay, I've got my left eye I can see through and I can see through my nose and my right side but my extreme left side is still fogged.

STAFFORD — Okay, Houston. He can just see through his nose and through one little hole in his left eye. I can see in the mirror that he's pretty well fogged up to about 60 to 70 percent of his visor.

HOU — Roger, Tom. And we're copying Gene pretty good, too.

STAFFORD — Okay.

CERNAN — I'm taking just a little rest, Tom.

STAFFORD — Okay. He's taking a little rest now, in fact, we'll be passing right over ....

This is Gemini Control Houston. We want to confirm that the AMU decision made by Stafford was NO GO. We've cancelled the AMU experiment. Cernan is back on the spacecraft electrical power and oxygen and at the present time he's taking a little rest as the spacecraft

moves across the New Mexico area. Gene came through with amazing visual definition that he could see through a little spot where his nose was but he could not see through where his eyes are. But, apparently, as to demonstrate that his vision wasn't completely obscured he asked why that motorcycle or car down there on the California freeway had a Texas license plate injecting some levity into the situation which, I suppose, is needed at this point. We're showing 51 hours, 14 minutes into the flight here and we expect the Texas station to acquire momentarily.

CERNAN — Neil, you might tell everyone down there that's concerned, I'm sure sorry about this.

HOU — This is Houston, Tom. Tell him we're not concerned a bit.

STAFFORD — GARBLE

CERNAN — All right, while I'm standing here..... did hang up, by the way. One handrail was deployed. The foot rail was deployed. The .... armrail with the umbilical guard were not deployed. They were .....but I was able to get past there without any problem by just hanging loose and I swung the ..... loose and the umbilical guard came out and squared away. I have the starboard EVA lights back there and I have one ... light. And I think where the problem was that just before sunset I bet my

pack got well over 100 degrees because it was really hot. And right after it got cool my visor started up and I could just ..... with the ....visor. I just couldn't see enough of where I was trying to get at to identify.....fogged completely over.

HOU — We copy.

CERNAN — And I guess it's about 40%. fogged over right now ....

STAFFORD — garble ...The sun's up pretty high here.

CERNAN — I'd like you to ask Houston how we stand just now. My pressure gage is still fogged. It's about four.

STAFFORD — Okay. One thing. How about getting the docking mirror out....garble

CERNAN — You want that out of there?

STAFFORD — Yes, we want it out of there.

CERNAN — Okay, I'll go up and get it.

Texas remote, Cal local.

TEX — Texas remote.

This is Gemini Control Houston. Cernan's moving up now to the forward end of the spacecraft to retrieve the rear view mirror which he mounted on the docking bar at the - earlier in his extra-vehicular activity. We have no firm estimates yet on just when Gene will return to the spacecraft expected to come, perhaps, five to ten minutes now. The flight plan

showed that he could remain out up to five hours and 50 minutes. He may elect to take the full time which is just not known at this point. His fogging is now reduced to about forty percent. Let's go back for additinnal conversation.

CERNAN .....forward. If you can .....forward, do it.

garble.

END OF TAPE

(Garbled for about 3 minutes, cutting in and out)

Stafford ....I don't want... again!..

Cernan I'm plugging up again now, just working here in high.

Stafford Houston, Gemini 9.

CAP COM Houston go.

STafford Ok, just during this period here he's fogging up when he went up to retrieve the docking bar. I'm going to make the recommendation that we ingress before sunset.

CAP COM Roger, we agree with that, Tom.

Stafford Ok, there's no use being out there taking pictures, making (garbled) trouble closing the hatch. We're going ahead and close the hatch.

Cernan Ok.

Cernan garbled

Stafford garbled (Both laughing heartily)

Stafford Ok, come on.

Cernan That's what they needed, to bail me in.

Stafford Ok

This is Gemini Control Houston. Stafford has recommended that Cernan return to the spacecraft before sunset. He has planned to return to the hatch area about 51 hours and 45 minutes into the mission and then take some sunset and darkness photographs. However, due to

the fogging condition which still obscures about 40 per cent of Gene's visor the decision has been made by Stafford, concurred here on the ground, that Gene return to the spacecraft and the hatch be closed fairly shortly. We still don't have a complete explanation for the fogging. We do know that while in the AMU area, in the adapter section, suddenly the temperature rose - Cernan reported he got quite warm and when he did, the fogging condition nearly obscured his visor area - it then became retarded - he could see more, but it still persisted and when he left the adapter area it was still 75 to 80 per cent obscurbed. It's now down on the order of 40 to 50 per cent. The two of them now are working...stowing the umbilical, getting Gene back. Let's go back and listen to this conversation.

Cernan	...(garbled) forward....there you go. (garbled) Gee, Tom, I'm really fogged up, I think I'm getting more fogged up now.
Stafford	Ok Houston. He's beginning to get more fogged up just as staying here so we are going ahead and ingress.
CAP COM	Roger, we concur.
Cernan	Ok Tom, how does it look down there?
Stafford	(Garbled)
Cernan	Thank you...(garbled) huh?
Stafford	No problem.
Cernan	.....Tom?

Stafford I'll free you, Gene.

Cernan Ok? Ok, there it goes.

Cernan (Garbled)

Stafford Coming in. No problem.

Cernan No problem.

Stafford No problem on a high rate, 39 per cent 02.

CAP COM Houston, Roger.

Cernan ...garbled (cutting in and out)..foot forward you've got the ELSS to get in here yet.

Stafford Ok, stand by.

CAP COM Ok, Tom, did you bring the EVA camera in?

Stafford Yes Neil, I've got it in.

CAP COM Ok, very good.

(garbling for 30 seconds)

Stafford It's really starting to fog now, Houston.

(cutting in and out for 45 seconds)

Stafford Ok, Houston I need some time this way.

Cernan ...face toward you.....I don't think you'll make it that way.

This is Gemini Control Houston. While Stafford and Cernan are maneuvering as Gene returns to the cockpit we do know that Cernan has recovered the Extravehicular Activity Camera. He has passed that in to Stafford and its been stowed at 51 hours and 26 minutes now. The hatch has been opened for two hours and 4 minutes and as he approached the hatch Stafford again reported, based on a relay from Gene Cernan

that he was encountering even more fogging which reinforces the wisdom of the decision to conclude the activity without attempting the AMU. Meanwhile here in the Control Center we are working on a plan to separate the Astronaut Maneuvering Unit from the adapter section. It will not jettison or move off by itself. The spacecraft must perform a translation maneuver to move out in a way from the AMU. At 51 hours and 26 minutes let's go back and catch what conversation we can as the spacecraft moves on the far end of the Antigua acquisition area.

Stafford	This /blooming hatch is harder is harder to close than we thought it would be.
CAP COM	Roger, you've got about five minutes until Antiqua, LOS, Tom.
Stafford	(Garbled)
Cernan	....of film
Stafford	Ok, let it go.

END OF TAPE

S/C ......garble.....we'll get this hatch closed.

Next transmission, garbled

STAFFORD I don't think I'd like to be with it now, would you?

CERNAN Put that lanyard.out .....garble

STAFFORD Okay, you sit down and take a rest.....garble

HOU Roger we got about three minutes yet and then it will be about eight minutes before RKV comes in.

S/C Rog.

This is Gemini Control Houston. We note as the two crew members were to make their final stowage thing and in preparation of closing the hatch, Cernan's heart rate has reached the highest point during his entire EVA period. It reached a peak of 180. We should loose signal at the Antigua Station - actually we're well beyond its range now. The next firm communication should come in about five minutes from the Rose Knot Victor. That acquisition is scheduled for 51 hours, 34 minutes. Crew is still apparently working - we just hear bits and pieces back and forth as they concentrate on this ingress procedure. We'll standby and monitor that conversation.

STAFFORD Okay Houston, we got the lox pressure

HOU That's the way to go Tom.

STAFFORD We're going to let the pressure go. We got the ....garble....up

RKV Don't do anymore

S/C OK.

CERNAN Is that it.

STAFFORD garble....we got the hatch locked.

This is Gemini Control Houston at 50 hours, 31 minutes into the flight. One minute ago at 50 hours, 30 minutes into the flight, Stafford reported "we have the hatch locked." They now are preparing to repressurize the cabin and will settle down for the remainder of this flight. We are still receiving some communication. It's a bit scratchy, at the far end of the Antigua area. We'll standby. This is Gemini Control.

STAFFORD Okay Houston, cabin pressure is back up.

HOU Houston copies.

END OF TAPE

This is Gemini Control Houston, 51 hours, 38 minutes into the flight. The Rose Knot Victor has acquired, there is a high back ground noise, something like a soaring airplane in the background but we could make out that the crew is going through the repressurization cycle. At last reading, the pressure in the cabin had built up to 3.13. They will continue to build now until something over 5 pounds. Stafford just noted they're up to 4 pounds. During the ingress procuedure, Cernan reported that his visor again became completely fogged. We have no sound explanation for this. A guess or two coming from one of our staff support rooms in the back is perhaps that the suit did not take enough moisture out all of in view of/Cernan's activities. Perhaps the suit failed to take away enough of the moisture which is one guess at what could cause the fogging. Stafford gave a quick summary on the EVA exercise by simply saying, "I think we've learned a lot." We have this conversation, we'll play it for you now.

RKV	Gemini 9, RKV standing by.
S/C	Roger, RKV.
RKV	Is it hot up there, Tom?
	(conversation garbled).
RKV	Gemini 9, RKV standing by.
S/C Stafford	Roger, RKV. Our cabin pressure is 2 PSI building up.
RKV	Roger, copy.
S/C Stafford	During the ingress maneuver, the pilot was completely fogged over.
RKV	Roger.

S/C Stafford — He's still fogged over.

RKV — Roger.

S/C Stafford — ....(garbled)... hope you were smiling.

RKV — Roger, we are.

S/C Stafford — So arewwe, believe it or not. I think we've learned a lot.

RKV — That's affirm.

S/C Cernan — I'll tell you one thing, Tom.....(garbled)..... (garbled conversation). .....I couldn't see anything, I only had the sunlight on one side and my visor was so fogged I couldn't see.....(garbled)....

HOU FLIGHT — RKV Cap Com, Houston Flight.

RKV — Flight, RKV Cap Com.

(garbled conversation)

RKV — We'll check with him as soon as we get a chance here.

HOU FLIGHT — Roger, have him turn the/ECSO2 manual heater on.

RKV — Roger, we're noticing it going down.

(garbled)

RKV — Gemini 9, RKV.

S/C Stafford — RKV, Gemini 9.

RKV — Roger, would you turn your ECSO 2 manual heater on?

S/C Stafford — Roger.

RKV	Cabin pressure 3.13.
HOU FLIGHT	Roger.
RKV	Tank pressure seems to be coming up all right, Flight.
HOU FLGHT	Roger.
RKV	....(garbled)...about 815.
S/C	RKV, Gemini 9. We're up to 4 psi.
RKV	Roger, copy.
S/C	RKV, Gemini 9.
RKV	Go, 9.
S/C	You might ask Houston, whether or not they got some D-14's for us. If they do, we'd better take the first one and have a look at it because I broke off the antenna.
RKV	Roger. Copy Flight?
HOU FLIGHT	Understand, he says he broke off the D-14 antenna?
RKV	That's affirmative. We'll have LOS in about a minute.
HOU	Gemini 9, Houston standing by.
S/C	Roger, Houston. Our cabin pressure is up to 5.05. Repeat information that Gene fogged over completely during the ingress maneuver.
HOU	Houston copies.

S/C Okay,....(garbled)...the cabin seal is good. The ECS system is in good shape and we are getting all straightened away.

HOU Houston copies.

This is Gemini Control in Houston. Although it might have been hard to decipher, we did deduce that the cabin pressure was up to 5.3 which is a normal cabin pressure. And apparently, things are settling down very nicely. The flight plan shows that for the next 45 minutes to an hour the crew will be engaged in stowing their chestpacks, stowing the umbilical, doing all of the post EVA functions. They are not quite as extensive as the four hour prep period before EVA but, more than an hour has been allotted here on the board for those kind of functions. Exactly one hour, as a matter of fact. We also do not yet have a precise time on when the AMU will be separated. We suspect that it will come along this afternoon a little later. It will involve both breaking loose the AMU from its fixed points at the adapter then the spacecraft will accelerate away from it. At 51 hours and 47 minutes into the flight, this is Gemini Control.

END OF TAPE

This Gemini Control Houston 52 hours 11 minutes into the flight. Carnarvon should acquire the spacecraft in approximately one minute. It will not be a long duration pass as the spacecraft is winging wide high and north and west of the Australia continents. Perhaps 30 seconds to 60 seconds communications at best. They have not yet acquired the signal. We expect fairly full discussion of the EVA maneuver over the Hawaii station and at more length during the stateside pass. This pass will take us down the West Coast of Mexico through the heart of South America. In the meantime we have checked with our ECCOM position here - electrical and environmental and communications - and he's passed on to us some times that he noted in his book - these may be revised later depending upon spacecraft records, onboard tapes, and the like. But his official logs showed the hatch opened at 49 hours, 21 minutes and 58 seconds elapsed time. That was 49 hours, 21 minutes, and 58 seconds - hatch open. Cernan was reported standing in his seat at 49 hours, 24 minutes and 7 seconds into the flight. Stafford reported the hatch was locked in place at 51 hours, 31 minutes, 00 seconds, 51 hours, 31 minutes - hatch locked in place and one minute later, 51 hours 32 seconds they reported the cabin was being repressurized. We still have no planned activities on the board this afternoon. We still expect that we will jettison the AMU in perhaps an hour and a half later, an hour to an hour and a half from now and perhaps additional experiments will be performed although we have no plan, as I say, at this time. At 52 hours, 13 minutes into the mission, this is Gemini Control. I am reminded we have a short and almost untelligible tape from the Tananarive Station, we'll play that for you now.

S/C	(Garbled)
ASC	Ascension has LOS
HOU	Tananarive, go remote.
TAN	Tananarive remote. Tananarive has acquisition.
HOU	Gemini 9, Houston standing by, Tananarive.
S/C	(Garbled)
HOU	Okay, we're having trouble talking to you over this station again. We'll be standing by. ...you have an eat period for about the next hour.
S/C	(Garbled)
Tan	Tananarive has LOS.

END OF TAPE

CRO All the systems look good. I've got two event lights. How easy 06 and how easy 02 are both on and they've been on since acquisition.

HOU What are they, Bill?

CRO They're RCS ring A pitch up and down, but the rings aren't activated so I don't understand this.

HOU Probably his ....circuit breakers, maybe.

CRO Yeh, I'm thinking.

HOU Does the rest of the RCS look okay , Bill?

CRO Oh yeah.

HOU Okay, what are those measurements?

CRO That's how easy 06 which is ring A pitch up and how easy 02 which is ring A pitch down. And confirm to the back room.

HOU Okay.

CRO Carnarvon has LOS.

HOU Roger, Carnarvon. You're going to need your voice tape.

CRO Rog, thanks.

HOU Those two are on a common circuit breaker. The first one in the overhead circuit breaker panel so it sounds pretty reasonable to hit it.

CRO Yeah, I'm surprised it's the only one they hit.

HOU Carnarvon Cap Com, Houston Flight.

CRO Go ahead, Flight.

HOU Give us a status on Hotel Echo 01 and 05.

CRO Stand by one. Flight, Carnarvon.

HOU Go ahead, Carnarvon.

CRO We're going to roll the tape back and we'll get you a readout.

HOU Okay. Bill, check those in your ground station.

CRO Roger, will do. Flight, Carnarvon.

HOU Go, Bill.

CRO Okay, all four parameters are on.

HOU Okay.

CRO I got that off the event recorder in the back room.

HOU Thank you. That's the way it should be and it is the circuit breaker, Bill.

CRO Rog. I should have checked both of them. I only read the left hand parameters.

HOU Okay.

AFD Hawaii, AFD.

HAW AFD, Hawaii.

AFD I want you to do three things. Check the RCS Alpha one pitch circuit breaker closed.

HAW Roger, pitch one.

HOU Roger.

AFD Verify TM control switch, real time and acq aid. Go to the experiment position on propellant

indicator selector switch and give reading on H_2 O_2 pressure and temperature.

HAW — Roger, I have it.

AFD — I'll send you an MI and stand by and just advise the crew that you have three things for them to do.

HAW — Roger. Hawaii has radar track and intermittent TM.

HOU — Roger, Hawaii.

HAW — Gemini 9, Hawaii.

S/C — Go ahead, Hawaii.

HAW — We have three small items for you if you have time.

S/C — To write down?

HAW — Negative.

S/C — Okay, go ahead.

HAW — We'd like for you to check RCS ring A number one pitch circuit breaker. See if it's closed.

S/C — It was open.

HAW — Okay. I see it on the ground. And we'd like to verify the TM switch is in the real time and acq aid position.

S/C — Okay, it's in real time and acq aid now.

HAW — Roger. Would you go to the experiment position on the propellant indicator switch and give us

a readout pressure and temperature on H_2O_2.

S/C — Okay. It looks we've banged a few switches around here. Reading 460 right now pressure and 65 degrees F temperature and our question is probably what you've been considering. Do you want us to get rid of it, or not?

HOU — Tell him we'll talk to him over the states on that.

HAW — They'll talk to you over the states on that.

S/C — Okay. Any other circuit breakers we kicked around?

HAW — We don't see any from here. Everything else looks real good.

S/C — Okay, thank you.

HAW — We'll be standing by.

S/C — You can tell Houston they'll probably see our water consumption go up rapidly.

HAW — Say again.

S/C — You can tell Houston they'll probably see our water consumption go up rapidly.

HAW — I don't doubt it.

S/C — Hawaii, Gemini 9.

HAW — Hawaii, go ahead.

S/C — Roger, we'd like someone to give us an accurate readout on our latest propellant quantity, please?

HAW — Roger.

HOU	Tell them we'd like an onboard prop quantity reading.
HAW	We'd like an onboard prop quantity readout.
S/C	Okay, but .....I'd say four percent, maybe three.
HAW	Roger. You copy, Flight?
HOU	Affirmative. We're going to give them an update over the states on this whole batch.
HAW	Gemini 9, Hawaii.
S/C	Go.
HAW	They'll be giving you an update on these quantities over the states.
S/C	Roger.
HAW	Gemini 9, Hawaii. We have one minute to LOS Stand by.
S/C	Roger, Hawaii.
HAW	Hawaii has LOS.

END OF TAPE

This is Gemini Control, 53 hours into the mission. Gemini 9 has just started its pass down over South America into the 34th revolution. We had considerable conversation this time while Gemini 9 was in range of the California, Guaymas and Texas stations. We updated the flight plan some and we had some conversation about the EVA. We'll play those tapes for you now.

HOU California remote

CAL California remote

HOU Gemini 9, Houston

S/C Houston, Gemini 9, go

HOU Roger, Tom. We'd like to have from Gene the - his best recollection of the configuration of that AMU at the time he left it. That is, in terms of connections, tether, arms, valves, and so forth.

S/C Are you reading us ok. We're reading you garble.

HOU We're reading you loud and clear so go ahead.

S/C OK. I'm not sure all you asked for but when I went back there, after I closed the hatch and I went back over the top all the way down to the hand-rails...

HOU Standby

S/C Extend the EVA bars

HOU Standby

S/C The umbilical guard come over the back of the adapter so I figured that they did not extend

HOU Standby

HOU You read it?

You read Houston?

S/C Houston are you reading?

HOU Yes, what we want to know Gene is the configuration of the AMU as it is now, right now, as best you know it.

S/C Okay. The AMU as it is now has a - the oxygen valve open, the hydrogen valve is open, on my gage I read 80 percent peroxide quantity. The battery switch is on.

HOU Okay, how about the arms and the tether?

S/C Houston, Gemini 9, your coming in broken.

HOU Roger. We got all that. We'd like to have the condition of the arms, the umbilical and the tether.

S/C The attitude control arm is up, it locked up. It's in the flight position a flyable position. The tether was discarded and its near the spacecraft.

HOU Roger.

Say again the position of the left arm.

S/C The left arm is down. Not in a locked position but all the way down.

HOU Roger, all the way down. Now how about the - any other electrical or hoses? Are they velcroed to the pack or are they loose or what?

S/C Chin hose is velcroed to the arm controller, the restrain harness on both sides is velcroed to the

S/C arm controller and the electrical connection I believe is velcroed. I think I got it back down but I cannot verify it.

HOU Roger, we got all that. Okay, for your information the - your onboard quantity indicates 20 pounds of fuel, the source pressure indicates 28 pounds of fuel, the ground equations indicate 35 pounds.

S/C Roger, we got that. Thank you

HOU OK. I've got a maneuver update when your ready to copy.

S/C Roger, Houston. We got that, is that fuel only or is that fuel and oxidizer?

HOU Fuel only.

S/C Roger. We'd like to do this orbit shaping to get your true anomaly in the right place if you'd agree with that.

S/C Roger. That sounds real good.

HOU Okay we'll have the - it when your ready to copy, I'll give it to you.

S/C OK. We need to do it right away?

HOU It'll be at 53:41.

S/C OK.

HOU That's about an hour from now over Tananarive.

S/C OK. We've got the platform all aligned here and we're in good shape . Standby. We'll copy it.

HOU OK. I can tell you first it's going to be a 25 foot per second burn. We'd like to make - monitor - have you monitor your VW tank, your reserve tank, during the burn. If it starts to go down, you stop your burn at that point.

S/C Shoot for 25 foot per second, if the VW tank starts down, we'll stop the burn.

HOU That's right and let us know how many feet per second you burned.

S/C Roger

HOU Guaymas remote
California local

GYM Guaymas remote

CAL California local

S/C Go ahead with the GET

HOU OK. GETB 53 41 35, delta V 25, burn time 31 seconds, yaw 180, pitch zero, address 25 90 250, address 26 zips, address 27 zips, aft thrusters, retrograde. Go ahead.

S/C Roger. GET of burn 53 41 35, delta v 25 feet per second, delta t 31 seconds burn time, yaw 180, pitch zero, address 25 90 250, 26 and 27 zips, aft thrusters, retrograde maneuver.

HOU That is correct and you can turn your cross feed on.

S/C Cross feed coming open

HOU Our current approach is not to jettison AMU unless we feel for some reason we'll have to.

S/C Roger. We were going to ask you about that. What is your recommendation?

HOU Well we're sure going to keep it for awhile. We want to watch these pressures and I'm sure you'll be watching them too.

S/C Roger.
I think we learned a whole lot out of the EVA. It was a real worth while exercise.

HOU Yes, we certainly agree with that.

S/C Wish you'd have gotten some data there on the previous one.

HOU Say again.

S/C I said I wish you and Dave had been able to get us some data on the previous one.

HOU Yea, but it looks like you got a lot of the data we would have got.

S/C Yea.
I think it was still a real good - a real fine exercise. We hated to give up the AMU portion of it but we did do some good umbilical evaluation and I got some pictures. We also had a lot of verbal inputs to give back to the people.

HOU Yea, we can see that it is very valuable. Hey Gino the EVA bottle is empty.

S/C Thanks a lot. Thanks a lot Dick. Still batting 500 Dick but a lot smarter.

HOU You did good work friend.

S/C You don't know how much.

HOU Yes I do. I was watching you, the surgeon told me.

S/C Houston, Gemini 9. Can you give us a time hack please?

HOU Roger. It'll be 52:45 MARK.

S/C Right on

HOU Texas remote

Guaymas local

HOU OK Tom, we're expecting this AMU pressure to go up and it may go up over 500 and its conceivable that you could get a light here sometime along the way.

S/C OK. We'll keep a close look on it Neil.

HOU OK, we're going to be thinking about this some more on the ground here.

S/C Roger.

HOU Looks like Tom that we are not planning to jettison the AMU even if that light does come on. However, in the configuration you have it we don't see any reason why we won't be able to jettison it if for some reason we have to.

S/C Roger.

HOU Houston's about a minute from LOS.

S/C Roger Neil.

We'll be set up and we'll make the burn according to instructions.

HOU Right. Guidance down here thinks you made a real good show there Gino.

S/C Like I said, I'm still only batting 500 but thats better then nothing.

HOU We're with you.

S/C Ask Dick if he don't think I need some ballet lessons?

HOU (Laugh) Do you want me to give them to you?

S/C Not exactly.

HOU Texas local

This is Gemini Control, 53 hours, 10 minutes into the flight. This orbit shaping maneuver that you heard Cap Com Neil Armstrong pass up to Tom Stafford is a maneuver that is designed to pull the apogee down about 10 to 12 miles. This will make retrofire dispersion less sensitive and it will allow better control during the reentry. The VW tank that you heard them talking about is an auxillary fuel tank, holds 12 pounds of fuel. If he starts to get into this tank during the burn he will quit burning at that time. This is Gemini Control, 53 hours and 11 minutes into the flight.

END OF TAPE

This is Gemini Control at 54:23 into the flight. Gemini IX has come within range of the Guaymas station for a very short pass there and we intend to just stand by. On the pass just completed at Hawaii we updated the flight plan for the crew, and on the pass of the CSQ prior to that we got a report of the maneuver. Tom Stafford says he did complete it on time, and he hit the reserve tank just as it was completed. The crew is tracking the ATDA. Their last report was that they were 164.72 miles ahead of the ATDA. Their range rate was 51 ft per sec and they were opening. We have the tape now from this start of the 34th revolution done at the Rose Knot. We'll start there and go thru Hawaii.

AFD	RKV CapCom, AFD.. fuel cell purge,OBC sum, and your MI shouldbe getting there shortly on the ATDA.
RKV	Roge
S/C	Ok RKV, I'm with you now. Do you want section one
first?	first?
RKV	Thats affirm.
S/C	Ok..purging hydrogen in section one
RKV	Roger
S/C	Purging hydrogen in section two
RKV	Roger
S/C	.....been looking real good up here, how they been looking down there?
RKV	They're running real beautiful down here, this is the (S/C cut in on conversation)
S/C	We're on the oxygen purge, section one.
RKV	Roger.
S/C	Yeah, they been holding real well here, voltages have been holding nice, currents have been very well balanced.

RKV Yeah, I never saw one before that ran this close one the currents, they're really in there.

HOU RKV .. Flight

RKV Go ahead flight

HOU One more thing we'd like to get while the crew is there is the watergun count.

RKV Gemini IX, would you give us a watergun count please?

S/C Watergun Tananarive 2706

RKV Roger. Copy 2706

S/C We're starting on this ATDA command sequence. We're now purging hydrogen section 2

RKV Roger. We're right with you. Just for your information, we turned the L band beacon off on the ATDA we also turned the acq lights on, on the ATDA and we're pretty well powering the ATDA up.

S/C Roger. Could you give us any idea where it is in relation to us, or where it will be after our burn?

RKV Roger. Stand by. The last information we had here on the ground,Houston's gonna get a better look at it, was that it would be at a slightly higher orbit than what y ou are in. It was about 185 miles away.

S/C OK. Thank you.

RKV Would you place the quantity read switch to the fuel cell 02 position?

S/C OK. Fuel cell 02

HOU RKV, flight

RKV Go, flight

HOU ATDA is 160 miles behind the s/c.

RKV Flight just advised that the ATDA is 160 miles behind you.

S/C Roger. And the transponder's on?

RKV That's affirm

S/C Ok. We'll do a little interrogating here.

RKV Ok Roger. We notice you have ...garble...on. Would you give us fuel cell H2 quantity please?

S/C Fuel cell H2.

RKV OK. You can go back to ECS 02.

S/C ECS 02

RKV Roger. You can even turn it off if you want to, or you can leave it.

S/C Hows our hydrogen quantity holding up?

RKV Our ...garble...has failed and we're not getting any indication down here on the ground on it.
OK flight...we've had LOS and LOS with the ATDA.

HOU Gemini 9, this is Houston, how do you read?

S/C We read you loud and clear

HOU Gene, your coming very garbled. I've got some dope for you though, your H2 quantity is around 40 to 46%, that is OK, we're getting a flight plan update ready and we'll send it up at Hawaii. Over

S/C Roger. Understand .

HOU CSQ CapCom, Flight. How do you read?

CSQ I can read you weak but readable.

HOU OK. The things we're interested in over your pass

HOU .... will be a summary of how the maneuver went, how t the OAMS fuel guage is reading on board, and if Tom makes any comments on whether the VW tank budged or not. The other thing we'd like to get is at least three main summaries while we're over your site.

CSQ Three mains?

HOU Affirmative.

CSQ Roger.

END OF TAPE

CSQ We show the Gemini as go. We have one parameter we are checking out in the back room on the right suit inlet temperature.

HOU Roger.

CSQ Gemini 9, CSQ Cap Com.

S/C Go ahead, CSQ

CSQ Roger, have you completed your maneuver?

S/C Roger, the maneuver was completed on time we hit the OAMS reserves tank just as it was just as it was completed. (Garbled) take out the residuals since it was the last burn.

CSQ Roger, understand. Could you give me an OAMS prop quantity reading please?

S/C OAMs prop reading indicates zero.

CSQ Roger, would you give me your OAMS reserve tank pressure.

S/C Roger....indicated zero.

CSQ Roger, would you give me your OAMS reserve tank pressure.

S/C Roger, we have .... 295.

CSQ Roger, understand. We have nothing further for you at this time.

S/C CSQ, Gemini 9.

CSQ Go ahead, Gemini 9, this is CSQ.

S/C The residuals on that burn were address 80 minus

S/C 0013.

CSQ Roger.

S/C 81 is 00006. 82 is 00022.

CSQ Okay, would you give me an address 81 please?

S/C Roger, 81 was 0006.

CSQ Roger, understand. I copy.

S/C And just- there was a complete burn. There was a definite indication that the OAMS regulated pressure was dropping. It dropped to about 285 to 290 and now it is up again to 290.

CSQ Roger, understand.

S/C CSQ, Gemini 9. Expecting a flight plan update Hawaii.

CSQ That is affirmative, Gemini 9.

S/C Roger. (Garbled)

CSQ Houston Flight, CSQ Cap Com.

Flight, CSQ.

HOU Go ahead, CSQ.

CSQ Okay, November Bravo 07 right hand suit inlet temperature is reading off scale ....

HOU Roger, we are reading it okay back here, Buck.

CSQ Roger, understand. Did you copy all the other information?

HOU Affirmative

CSQ Gemini 9, CSQ.

C/S We have been reading the L-Band on the ATDA for about 10 minutes, the range rate is very slow. We were opening prior to our burn then we started to close very slowly and we are presently at 162.75 miles with range rate of plus 26 feet per second.

CSQ Roger, understand

S/C The lock on is pretty slow and occasionally it drops out but it looks like a pretty good lock on.

CSQ Roger.

S/C Prior to LOS I will give you another range and range rate, if you like.

CSQ Roger.

CSQ Hello Flight. We have about an 85 heart rate on the pilot at this time.

HOU Say again.

CSQ The heart beat on the pilot is about 85.

HOU Roger.

S/C Gemini 9. On my mark would me your range and range rate please.

CSQ Gemini 9, roger.

S/C Mark

CSQ Gemini 9 on your mark, range was 164.72 miles.

CSQ Range rate is 51 feet per second ....

C/S 51 feet per second.

HOU Roger, understand.

CSQ Okay, you are just about to leave us here, Gemini 9 we show you as go as you are going over the hill.

S/C Roger.

CSQ CSQ has LOS both vehicles.

HOU Roger, CSQ.

CSQ I am going to have to break down my tape a little bit, Flight. It may take a while.

HOU Break down your tape for what, Buck?

CSQ Make sure I got all the information they passed to me.

HOU Okay.

CSQ We will get you in addition to the post... probably have some of it on there.

HOU That will be fine.

Hawaii, Flight, Hawaii, Flight

HAW Hawaii, Flight.

HOU Did you get your MI?

HAW Roger.

HOU Okay, one more thing we would ask the crew to do is get a report here if they have some extra film to also take some pictures of South America coast line, weather, things like that. If they get a chance.

HAW Roger.

AFD, Hawaii.

AFD AFD, go ahead, Hawaii.

HAW Okay, on this last MI, I have got a question.

AFD Okay.

HAW What is NADIR.

AFD Nadir?

HAW Roger.

AFD That is correct, huh?

HAW That is affirmative.

AFD Nadar.

HAW Thank you.

AFD Roger.

AFD Hawaii Cap Com, AFD

HAW AFD, Hawaii.

AFD Nadar stands for straight down.

HAW Thank you.

AFD Roger.

HAW We have radar track and initial contract on TN.

Gemini 9, Hawaii.

S/C Hello Hawaii, Gemini 9.

HAW Roger, I have a flight plan update for you.

S/C Roger, be ready to copy in one minutes.

HAW Roger.

S/C Hawaii, Gemini 9, go.

HAW Roger. 54 38 34 through 54 47 28 photograph

HAW South America, 70 mm Hasseblad, 80 mm lens, strip shot. Weather and film permitting. These should be nadar photographed.

S/C Roger.

HAW 55 30 - stand by, 54 57 00 this is an F-1, start with Milky Way exposures take two exposures of each of the four horizons, starting north, then west, south and east. 55 30 00 load re-entry module tape. Then power down except for rate gyros.

HOU Hawaii, Flight.

HAW Stand by Gemini 9. Go, Flight.

HOU We would like to do that re-entry loading over your site, so it will be about 20 minutes later than that.

HAW Roger. Gemini 9, Hawaii. That time for loading the re-entry module should be approximately 55 46 37. That will be Hawaii acquisition on the next rev. Also over Hawaii on the next rev at 55 46 18 crew status report. S-11 56 49 17 sequence 02 southern horizon only. Use Acknar for yaw attitude. CSQ 57 04 02 PLA update. RKV 58 00 00. Purge fuel cells and cryo quantity read out. 57 30 00 through 58 30 00 eat period. 58 30 00 through 66 30 00 sleep period.

END OF TAPE

HAW — .....66 30 through 67 30 00 eat period. 66 38 52 over Carnarvon, purge fuel cells cryo quantity readout. That's all.

S/C Stafford — Roger, Hawaii, could you give us the first times for the South America strip chart?

HAW — Roger, 54 38 34 through 54 47 28.

S/C Stafford — Roger.

HAW — We'd also like for you to think about the weight update of the spacecraft at this time such items that you have jettisoned and the amount of the O2 and the EISS and such as this.

S/C Stafford — Roger. EISS has approximately one pound of oxygen left in it.

HAW — Roger.

S/C — And the jettison ejector was estimated to be approximately two pounds.

HAW — The number of items jettisoned should add up to around two pounds?

S/C — That's affirm, that's internal from the spacecraft and of course, there was S-12 fairing and the.....

HAW — Roger, I copy.

S/C — Hawaii, Gemini 9.

HAW — Gemini 9, Hawaii.

S/C I'd like to give you a status of that D-14 antenna.

HAW Okay.

S/C Okay, I broke it about two thirds of the way down, I actually broke the case and it seemed to semi-snap back in place. Apparently, there is a cable or a line through it. Its not spring-loaded like the UHF nose antenna. It may or may not work, I don't know whether you want to try it.

HAW I believe they cancelled the rest of the D-14 experiment.

S/C Okay.

HAW We're at LOS minus one, Gemini 9.

AFD Hawaii Cap Com, AFD, Gemini LOS main please?

HAW Roger, It's on its way, we just had LOS.

AFD Roger.

END OF TAPE

This is Gemini Control at 55 hours into the mission. Gemini 9 is just coming up on the west coast of South Africa. Gemini 9 is in the night side of its 35th revolution and the crew is now conducting the S-1 experiment. This is the zodiacal light photography. They did complete the photography over South America and the Rose Knot tracking ship has a brief conversation with the spacecraft as it passed over that station which we'll play for you now.

RKV — Gemini 9, your spacecraft is go. Gemini 9, RKV standing by.

S/C — Roger, RKV.....

RKV — Roger.

HOU — RKV, Houston Flight.

RKV — Go, Flight.

HOU — You might mention to the crew that we have to transfer four pounds of water to the water boiler. That's 132 count and we would like to start that over the CSQ on this pass coming up.

RKV — Okay, you want to transfer four pounds of water to the water boiler, is that correct?

HOU — That's correct.

RKV — Over the CSQ?

HOU — Starting at the CSQ, yeah.

RKV — Oh, roger. I'd like to have you transfer about four pounds of water to the water boiler

	- 3 to 4 pounds - and start that over the CSQ.
S/C	Four pounds of water to the water boiler.
RKV	134.
S/C	134.
RKV	That's affirmative.
HOU	RKV, that's 132 count.
RKV	Correction on that, Gemini 9, it's 132 count.
S/C	RKV, this is Gemini 9. We'll start drinking quite a bit here soon.
RKV	Roger.
S/C	You want 134 - 132 from what we have now.
RKV	That's affirmative. Gemini 9, RKV.
	....minutes to LOS.

END OF TAPE

This is Gemini Control at 55 hours, 10 minutes into the flight. Gemini 9 is passing over the east coast of Madagascar within range of the Tananarieve station. Houston's spacecraft communicator, Jim Lovell put in a call to the spacecraft a little bit ago. Tom Stafford came back and advised that he was in the middle of an S-1 experiment, so we will not attempt to contact the crew during this pass. We'll wait until we acquire at the CSQ in the Western Pacific. This is Gemini Control.

END OF TAPE

This is Gemini Control, 55 hours and 40 minutes into the flight. Gemini 9 has just completed a pass over the Coastal Sentry tracking ship. We'll play that tape for you now.

HOU Tananarive go remote

TAN Tananarive remote

HOU Gemini 9, Houston

S/C Roger Houston. We're in the middle of an S-1 photograph right now.

HOU We have a loading module procedure for you if you're ready to copy. Over.

S/C Standby a minute we're still on the experiment S-1

HOU This is Houston standing by, we'll send the procedure at CSQ.

S/C Roger

TAN Tananarive has LOS

HOU CSQ Cap Com AFD

CSQ AFD, CSQ Cap Com

HOU CSQ Cap Com AFD

CSQ AFD, CSQ Cap Com, how do you read?

HOU Read you loud and clear. Did you receive all your MI's?

CSQ (garbled)

HOU You faded out CSQ

CSQ I have all my MI's, that is affirmative

HOU Roger. Any questions?

CSQ Negative. I assume that this earlier AP unloading procedure is by the board. Is that affirm?

HOU Say again.

CSQ This new reloading procedure is replacing the old one that we had, right?

HOU That's affirmative

They are quite similar with just a few changes.

CSQ Roger, I noticed

HOU CSQ Cap Com, AFD

CSQ Go AFD

HOU Did you receive the MI changing the power down at module tape loading from your site to Hawaii?

CSQ Roger. You pass that to - up to them on rev 34, is that affirm?

HOU That was passed to the crew by Hawaii at rev 34 during the flight plan update.

CSQ Roger, understand

HOU Okay standing by for you CSQ.

CSQ Roger.

CSQ CSQ has TM solid, Gemini.. Shows vehicle is GO.

CSQ Gemini 9, CSQ Cap Com

S/C CSQ, Gemini 9. We're loading water into the water bottle.

CSQ Roger. Could you give me the gun count prior to the start?

S/C Yes it was 27

CSQ Roger and that's a 132 gun count

S/C Roger. When they told /us that we started at 2715, we drank quite a bit, we're now at 2747. We're going down to 2847.

CSQ Roger, understand. I have a module 4 loading procedure for you, when your ready to copy.

S/C OK.. We'll ....this and load the water bottle right now.

CSQ Roger understand.

S/C Is this procedure different from ordinary, we know the regular procedure and have it on board.

CSQ Roger, this is a new procedure, Gemini 9.

S/C Okay, CSQ go ahead

CSQ This is step one switch to catch up lode, verify IVI's do not drive. Step two set small numbers in IVI's. Step three insert into the MDIU address 25 all zips, address 26 all zips, address 27 all zips. Step four push start comp, IVI's should read zero. Five switch to prelaunch. Step six at 55 46 00 load module 4 by the ATM automatic. Step seven switch to reentry mode. Step eight verify computer run light stays off. Step nine switch to prelaunch. Did you copy?

S/C Roger. Repeat step eight please.

CSQ Step eight verify computer run light stays off.

S/C Roger. I'd like to read them back to you real quick.

CSQ Go

S/C Number 1 - switch to catch up mode, verify IVI's do not drive. Set small numbers in IVI's. Set 25, 6, and 7 are all zeroes, Step 4 is push start comp, IVI's at zero. Step 5 prelaunch, 55 46 00 load module 4 in the automatic. Step 7 switch to reentry mode, verify comp light is off and step 9 switch to prelaunch.

CSQ That's affirmative and if you have time I have a flight plan update.

S/C Go ahead with the flight plan update and if we have any anomalies prior to step 6 should we continue or not.

CSQ Standby one.

CSQ Houston Flight, CSQ

HOU Standby we're checking on it.
We'd like to know what the anomaly is before we proceed past step 6.

CSQ Gemini 9 he would like to know what the anomaly is before preceeding.

S/C Roger understand. Go ahead with the update.

CSQ Roger. Title CSQ at 57 04 00. Computer prelaunch for 46-1. PR and computer update. Did you copy?

S/C Roger. Copied. CSQ at 57 04 00, computer prelaunch for 46-1, PR and computer update.

CSQ That is affirmative
We have nothing further for you at this time. We show you as go.

S/C Roger. One question, this procedure prior to loading the normal weights on the ATM is about the comp start distance that we had the other day?

CSQ That is correct. That is affirmative.

S/C OK thank you

HOU OK CSQ sounds good. How does everything look on the ground?

CSQ Everything on the ground is GO.

HOU OK.

S/C CSQ this is Gemini 9

CSQ Go niner

S/C Question on step one. Do they want me to insert the small numbers in the IVI's when I go to catch up?

CSQ Standby

CSQ Houston Flight, CSQ

HOU Go ahead

CSQ Did you copy his transmission?

HOU Yes we want to insert small numbers in the IVI's and then see if they go to zero.

CSQ Roger

CSQ Roger, you want to set small numbers in the IVI's to see if they'll go to zero.

S/C Roger. They do go to zero. Understand you want me to

verify that they do not dry.

CSQ That is affirmative.

S/C OK then we've got an anomaly right there.

CSQ Standby

CSQ Did you copy Flight?

I think he's confused on the step one and step two, he!s getting them confused. Shall I tell him that?

HOU Standby a minute.

CSQ We're having dropout Flight.

CSQ We're getting to LOS

CSQ CSQ has LOS Gemini

END OF TAPE

This is Gemini Control at 56 hours into the flight. Gemini 9, a few minutes ago, passed out of range of the Hawaii station, is now swinging down toward the Equator between Hawaii and South America. During the Hawaii pass, we did get a crew status report and Gene Cernan loaded the computer with the reentry module tape. Here's the playback of the Hawaii pass now.

HAW	Gemini 9, Hawaii.
S/C	Go, Hawaii.
HAW	Rober, have either of you started on your oral temperature yet?
S/C	That's affirm.
HAW	Roger. I have a little change to that ATM loading procedure, if you'd like to copy?
S/C	Go ahead.
HAW	Okay, we'd just like for you to go to the catch up mode on the computer and then pick up the sequence you already have at number 3.
S/C	Roger, understand.
HAW	Okay, he's in the catch up mode now and evidentally they're going through the procedure. We're getting oral temperature on both of them at this time.
HOU FLIGHT	Roger.
HAW	Gemini 9 Pilot, we have a good temperature on you.
S/C	Gemini 9, Roger, and I'm starting on step 6 of loading the ATM.
HAW	Roger. We've been following you down here. You're looking okay at this time.

S/C Cernan — Affirmative, everything's go and we'll get you the rest of the crew status as soon as the pilot can talk -- correction -- command pilot.

HAW — Roger, understand.
Okay, we have a good temperature on the command pilot.

S/C Stafford — Hawaii, Gemini 9, water now at 2764 and we'll continue drinking and dumping it until we have 2847 on the gage.

HAW — Roger, you have 2764 at this time, you will continue until 2847.

S/C Stafford — Roger, that's to give us that 132 ounces.

HAW — Roger. Have you both been drinking about the same? Or is one of you thirster than the other?

S/C Stafford — Gene has had about three times now since EVA.

HAW — About three times as much since EVA?

S/C Stafford — Rog. We've each had one meal today and we're working on the second one.

HAW — Roger. How do you feel today, compared with yesterday when you decided to delay the EVA until today? As far as tiredness and physical feeling?

S/C Stafford — Roger, we feel about twice as good. We' both felt a little drowsy yesterday.

HAW — Roger, understand.

S/C — Hawaii, it appears that module 4 Alpha is going in.

HAW	Roger.
	Flight, Hawaii, he's loading the tape at this time.
HOU FLIGHT	Roger, Hawaii, we copy.
HAW	As he announces he has completed loading it, we'll send you another OBC.
HOU FLIGHT	Okay. Send us a couple during that time.
HAW	Okay, we've sent about three already.
HOU FLIGHT	That's fine.
HAW	Gemini 9, Hawaii.
S/C	Go Hawaii.
HAW	Okay, I've got a small flight plan update for you, if you're ready to copy.
S/C	Go ahead.
HAW	Node 55 18 51, Rev 35 77.0 degrees east right Ascension, 19 hours 01 minutes.
S/C	Roger, we got the node 55 18 51, Rev 35 77.degrees east we're at Ascension 19 hours 01 minute.
HAW	Roger, that's affirmative.
	Houston, Hawaii, our 1218 has faulted.
HOU FLIGHT	Procedures copy.
HAW	Gemini 9, Hawaii, we have one minute before LOS.
S/C	Gemini 9, Roger.
HAW	Hawaii has LOS.
S/C	Gemini 9 module 4 Alpha has been loaded and ... (garbled).....

HAW — Flight, Hawaii.

HOU FLIGHT — Go, Hawaii.

HAW — Roger, Just as he was going over the hill he said module 4 A had been loaded but it sounded like he said a few more words after that but he faded out.

HOU FLIGHT — Yes, that's just the way I read it too, Jerry. He said loaded and he faded out.

HAW — Rog.

END OF TAPE

This is Gemini Control, 56 hours, 40 minutes into the flight. And Gemini 9 is over South Africa on its 36th revolution. We're in the night side of this revolution and Tom Stafford and Gene Cernan are conducting the S-11 airglow horizon photography experiment at this time. In the Control Center we've just activated the time to retrofire clock. It shows we're 15 hours, 5 minutes, 46 seconds away from retrofire. This is Gemini Control.

This is Gemini Control. We have a brief tape from the pass over the Rose Knot Tracking ship. We'll play that for you now.

HOU — RKV, Flight.

RKV — Go ahead, RKV.

HOU — Got everything you need for this pass?

RKV — Oh, roger.

HOU — Standing by.

RKV — Roger, we have about 20 seconds to go.

HOU — He's probably going to tell you how the module loading went.

RKV — We have Gemini TM solid.....

HOU — RKV, would you go with experiment's position and give us a read out on the hydrogen peroxide pressure and temperature, please.

S/C — Roger, we're there now and it is 60 degrees and 480 psi.

RKV — Roger, copy. 60 degrees, 480 psi.

S/C — That's affirm and the ATM, the computer is loaded. It has been verified with 4 Bravo. He has verified the temperature - it's been verified with four Alpha and .....

RKV	Roger.
S/C	All procedures checked out.
RKV	Roger.
HOU	Roger, he's looking good from down here.
	We have nothing further for you.
S/C	Roger, thank you.
RKV	RKV has about one minute to LOS.
HOU	Say again, RKV.
RKV	Roger.....we have a minute to go to LOS.
...	And they roger'd on up.
RKV	We've had LOS on Gemini.

END OF TAPE

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 4:40 PM TAPE 177 PAGE 1

This is Gemini Control, 57 hours into the flight. Gemini 9 is over Burma, not quite within the acquisition range of the Coastal Sentry. There was a very brief conversation at Tananarive and we will play that tape for you now.

HOU Gemini 9, Gemini 9, this is Houston at Tananarive. We are standing by and we have nothing for you this pass.

S/C Roger,...(garbled)

HOU Roger.

S/C Roger....(garbled)

HOU Finally. Gemini 9, this is Houston we have one minute until LOS. Have a good night's sleep and real good show, Gene.

S/C What was the last transmission, please?

HOU Roger, we have one minute to LOS. Have a good night's sleep and a real good show, Gene.

S/C Roger, (garbled)

TAN Tananarive has LOS.

END OF TAPE

This is Gemini Control, 57 hours and 11 minutes into the flight. Fourteen hours and 35 minutes away from retrofire. Gemini 9 is over the Western Pacific within range of the Coastal Sentry tracking ship. The spacecraft communicator aboard the CSQ has been updating the crew with information for the 46-1 landing area. We'll play back this pass from the start now.

CSQ CSQ has TM solid Gemini. Show the vehicle as GO

HOU Roger CSQ

CSQ Gemini 9, CSQ Cap Com

S/C CSQ Gemini 9, Go

CSQ Roger, I have a new TR time for you.

S/C Go

CSQ Roger. Transmitting TR

CSQ Your in sync Gemini 9

S/C Gemini 9 is counting down and I'm ready to copy your PLA

CSQ Roger. I have a load to transmit.
You are in sync.
Standby for load
MARK

S/C Load is received

CSQ Roger. We've identified on the ground that your load is good. Standby for a pad message. Area 46-1
GETRC 71 46 47, REP 400K, 19 plus (garble)

CSQ Gemini 9 CSQ Cap Com

S/C Go CSQ

CSQ Area 46-1, GETRC 71 46 47, RET 400K, 19 + 49, RETRB 26 + 09, take a left 50, take right 60. Do you copy?

S/C Roger 46-1, GETRC 71 46 47, 400K at 19 + 49, first bank at 26 + 09, take left 50, bank right 60.

CSQ Roger, MDIU quantities [illegible]. Core -03-63 906, core 04-349 67, core 65-01 76 66 core 66-34 74 3, core 07-65 41 7, core 08-40 83 3, core 09-15 29 4, core 10-02 75 6, core 11-28 50 0. Did you copy.

S/C This is Gemini niner. Roger got them all and I'll check them. If there's any anomaly I'll check that.

CSQ Roger. Understand. I have your PLA update for you. Would like for you to stay in a prelaunch mode until we tell you to switch.

Are you ready for the PLA?

S/C Go

CSQ Area 38-3, 59 54 46, RET 400K, 19 + 20, 25 + 27, area 39 delta 60 49 43, 20 + 53, 23 + 56, area 40-2, 62 .....to 36, 20 + 42, 25 + 31, area 41-2, 63 59 27, 20 + 27, 25 + 17, area 42-2, 65 35 27, 20 + 15, 25 + 09, area 43-2, 67 11 08, 20 + 04, 25 + 26, area 44-1, 68 37 08, 20 + 10, 25 + 22, area 45-1, 70 11 51, 20 + 03, 25 + 32

bank angles for all areas, roll left 85, roll right 95. Weather in all areas good. Sep maneuvers none. Did you copy?

CSQ Flight CSQ Cap Com.

HOU Go ahead

CSQ I don't know how much I got into him Flight on the PLA update. We had LOS

HOU OK we'll check it at Hawaii

CSQ Roger his TR clock was in sync

HOU And you got the load in?

CSQ We got the load in and even the MDIU print-out and we checked it with the DCS and everything checked out okay.

HOU Roger. Did you notice anything on the spacecraft? Everything looks all right.

CSQ Everyth ng on the spacecraft looked good as it went over the hill.

HOU Roger.

END OF TAPE

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 5:20 PM TAPE 179 PAGE 1

This is Gemini Control, 57 hours 40 minutes into the flight and Gemini 9 is over the South Pacific about mid-way between Hawaii and South America nearing the end of the 36th revolution. Over Hawaii, the spacecraft communicator completed passing up the landing area updates and he gave the crew the latest orbital figures. Gemini 9's apogee is 157.5 nautical miles. Its perigee 145.6 nautical miles. We will play the tape of the Hawaii pass for you now.

HAW Hawaii has intermittent TM and intermittent C-Band.

HOU Roger, Hawaii.

S/C Hawaii, Gemini 9.

HAW Gemini 9, Hawaii.

S/C Roger,setting here going over the basic flight. What is the latest (garbled)

HOU Stand by and I will get the latest.

S/C Gemini 9, also did not receive anything after 43-2 from CSQ.

HOU Roger, I have the rest of that for you. The spacecraft has an apogee of 157.5 and a perigee of 145.6.

HAW Gemini 9, Hawaii. Okay, your apogee 157.5, perigee 145.6.

S/C Roger.

HAW Okay, did you get all of 43-2?

S/C Roger, got all of 43-2.

HAW Roger, stand by for - I have two more items.

HAW 44-1, 683708 two zero plus one zero 25 plus 22 and all the bank angles are rollleft 85, roll right 95. The weather is good in all areas and there is no SEP maneuver. 45-1 701151 200 plus 03 25 plus 32 and that is all.

S/C Was that 45-1?

HAW Roger, that was 45-1.

S/C Okay, we got them all and got the bank angles and weather, thank you.

HAW Roger.

S/C How long would you like us to leave the computer on?

HAW Stand by. Do you want them to go ahead and power down the computer, Flight?

HOU Hawaii, Houston Flight.

HAW Go, Flight.

HOU We are ready to power it all down.

HAW Roger. Gemini 9, Hawaii. You can go ahead and complete the power down.

S/C Roger.

HOU Why don't you get an OBC to him, Hawaii?

HAW It is on its way Flight.

HOU Okay.

HAW Flight, Hawaii.

HOU Go.

HAW Okay, we confirm less than 1/8th separation in this TR time.

HOU Roger.

HAW Flight, Hawaii.

HOU Go, Hawaii.

HAW Okay, we confirm CSQ's report on the MDIU's read out. We check also.

HOU Okay, fine.

HAW Gemini 9, Hawaii, we have one minute to LOS. Standing by.

S/C Roger, thank you very much Hawaii. See you in the morning, I guess.

HAW Roger, we will be looking for you. Hawaii has LOS.

HOU Roger, Hawaii and it looks like that is all for today for you, Jack.

HAW Roger, thank you.

HOU See you in the morning.

HAW Roger.

HOU Good night.

HAW Okay.

END OF TAPE

This is Gemini Control at 58 hours 12 minutes into the flight. Gemini 9 is just passing over the west coast of Africa in its 37th revolution. Tom Stafford and Gene Cernan are just about to wind up the time set aside for their evening meal and at 58 hours 30 minutes elapsed time will begin an eight hour sleep period. This last pass over the Rose Knot Tracking ship off the coast of South America will be the last time we will attempt voice communications with the crew this evening. We will not attempt to disturb them during the sleep period. Although we will continue to monitor the systems on the Gemini 9. We have a tape of that pass and we will play that for you now.

RKV Gemini 9, RKV Cap Com.

S/C RKV....

RKV Roger, we would like to get this fuel cell purge started and we would like to start with section 2.

9 RKV, we would like to get an onboard reading of the hydrogen peroxide pressure and temperature.

S/C Roger, stand by. Hydrogen peroxide pressure is 48, temperature is 64 degrees.

RKV Roger, copy 48 and 64 degrees.

Okay we would like to have you turn your tape recorder power circuit breaker to the open position.

S/C On.

RKV And we would like to get a ..... from you Gemini 9 on that 132 ounce of water. Did you drink any of it. Do you know how .... or how much you drank

RKV of it?

S/C Roger, we drank out of 132, we drank a good 70 of it.

RKV Roger, copy 70.

HOU RKV, is that equally between the two?

RKV Say again, Flight.

HOU Is that 70 about equal between the two pilots?

RKV I will check. 9, RKV. I would like to know if that was an equal amount between the both of you .

S/C Roger, that was about equal between the two of us.

HOU Roger, thank you.

RKV Okay, as soon as we get these fuel cells purged we will get a ... quantity read out and we will put you to bed and let you sleep the rest of the night.

S/C All right. Sounds good. We are still dictating on paper about the EVA activity and also the rendezvous.

RKV Roger.

Flight, RKV.

HOU Go ahead.

RKV Okay, in the pump configuration he is on A pump in the primary mode and B pump in the secondary.

HOU Okay. Thank you.

Flight, I think we might suggest to him to also go to the B pump and the primary loop. We are showing that the temperatures have already started

RKV coming down almost feasibly on the ECS control valves. I imagine it will get pretty cold in there before long.

HOU Okay, just make that to them easy, his choice.

RKV Roger. 9 RKV.

S/C Go ahead.

RKV Okay, we noticed your A pump and primary loop control valves/temps are coming on down and ... thought you might be a little cool in there in a bit.

S/C Roger, we got you.
(Garbled)

RKV Okay if you will switch the fuel cell 02.

S/C Now we have got the ECSO2 heater off fuel cell H2 (garbled)
Roger.

RKV Okay 9, you can move your switch back to the off position.

S/C Roger, it is off.

RKV Roger. We are all finished with that and have a good night's sleep. We will be watching you here on the ground.

S/C Roger.

HOU RKV, Flight.

RKV Go, Flight.

HOU Tell them the Black Team will see them when they

HOU get back.

RKV Again.

HOU Tell them the Black Team will see them when they get back.

RKV Roger. We will see you next rev 9, and we won't see you again tomorrow.

S/C Thanks for all the help.

RKV Roger, it has been a pleasure.

S/C How is the season down there these days.

RKV Well, its nights are calm and nice sunny days.

9 Houston Black Flag says that they will see you back in Houston.

S/C Okay.

RKV We have had LOS with Gemini

HOU Roger, RKV.

END OF TAPE

This is Gemini Control at 59 hours, 10 minutes into the flight and Gemini 9 is over the South Pacific Ocean. Tom Stafford and Gene Cernan are in the first hour in their sleep period and none of the tracking stations are attempting to communicate with them. About 20 minutes ago, the pass over the Coastal Sentry tracking ship in the Western Pacific, the CSQ Cap Com reported that his Flight Surgeon noted that neither of the pilots was moving around, but that their heart rates had not dropped into the sleep range yet and that they presumed to be still awake at that time.

Gemini 9 is 12 hours, 35 minutes away from retrofire. This is Gemini Control.

END OF TAPE

This is Gemini Control at 60 hours 10 minutes into the flight, Gemini 9 is over China, not quite within the range of the Coastal Sentry tracking ship. All the ground tracking stations continue to give Gemini 9 a go, the last station that took a look at the pilots, the Flight Surgeon took a look at the pilots, the RKV, about 35 minutes ago, reported that the pilots did not appear to be asleep or if they were sleeping it was not a deep sleep. They've been into this period that has been set aside for sleep about an hour and a half now. It's due to end at 66 hours and 30 minutes elapsed time, or about 2:15 a.m. Central Standard Time. We show the orbit now for Gemini 9 to be 157.3 by 145.7 natuical miles. Our clock show we are 11 hours 35 minutes away from retro-fire, which is set for 71 hours 46 minutes, 47 seconds of elapsed time. That's 726 20 Central Standard Time, this is Gemini Control.

END OF TAPE

This is Gemini Control at 61 hours, 12 minutes and 20 seconds after lift-off. Gemini 9 at the present time is over the tracking ship Rose Knot at the beginning of the 39th revolution. The Spacecraft Communicator aboard the Rose Knot reported to the Flight Director, here in Mission Control, that both pilots appeared to be sleeping fairly soundly.

Toward the mid-point of the 38th revolution, over the tracking ship Coastal Sentry, the Spacecraft Communicator reported that it looked like the Command Pilot was asleep and that the Pilot was resting well, with a heart rate of a little over 80 and it was an even respiration, but he couldn't say definitely whether he was asleep or not.

At 61 hours, 13 minutes and five seconds after lift-off and 10 hours, 33 minutes and 39 seconds before retrofire, this is Gemini Control.

END OF TAPE

This is Gemini Control at 62 hours, 10 minutes and 30 seconds after lift-off. Gemini 9 at the present time is over the Southwest Pacific, approximately over the area of Tahiti. During the pass over the Coastal Sentry Quebec, mid-way through this 39th revolution. The systems were "GO" on the ground. The crew apparently are still asleep. The next station which will acquire the spacecraft will be the tracking ship Rose Knot. Approximately 32 minutes from now, this will be a very low..elevation angle pass, in other words it will be almost over the horizon from the ship. The pass only lasts something like three minutes and 14 seconds. This will be the last pass of the evening over the Rose Knot, at which time the Flight Director, Cliff Charlesworth, likely will release the ship for the night. At 62 hours,11 minutes and 30 seconds after lift-off and nine hours, 35 minutes and 14 seconds until retrofire, this is Gemini Control.

END OF TAPE

This is Gemini Control, 63 hours, 10 minutes and 30 seconds after liftoff. Gemini 9 at the present time is over the Persian Gulf and just a few minutes ago passed over the Canary Island tracking station at which time the Canary Island spacecraft communicator reported that the spacecraft was go on the ground from the telemetry readouts. The next station to acquire will be the Carnarvon station. It'll be a very brief pass because there's such a low elevation angle. In fact, they may not even be able to get too much in the way of telemetry data during this pass. At 63 hours, 11 minutes and 12 seconds after liftoff, and 8 hours, 35 minutes and 31 seconds before retrofire, this is Gemini Control.

END OF TAPE

This is Gemini Control 64 hours 11 minutes and 30 seconds after lift-off. Gemini 9 at the present time is nearing the end of revolution number 41, off the west coast of South America. Early in this revolution during the pass over the Coastal Sentry, the Spacecraft Communicator reported to Flight Director here that the suit inlet temperature was standing at 64 degrees, which is slightly higher than normal, but of no concern. The Flight Director then released the Coastal Sentry, since that was the last pass of this mission for that ship. At 64 hours 11 minutes and 14 seconds after lift-off, and 7 hours and 35 minutes and 30 seconds before retro-fire, this is Gemini Control.

END OF TAPE

This is Gemini Control at 65 hours, 10 minutes and 30 seconds after lift-off. Gemini 9 at the present time is crossing the north coast of Australia, toward the end or mid-point, I should say, of the 40th revolution. The orbit measurements at the present time stand at 157.2 nautical miles perigee, as you were, apogee by 145.6 nautical mile perigee.

We've had a little culture injected into the quiet hours of Mission Control, here with classical music being patched into an inactive communications loop. At the present time a composition by Johann Sebastian Bach is on the air and just prior to that, we had the Russlan and Ludmilla Overture by Mikhail Glinka.

At 65 hours, 11 minutes and 23 seconds after lift-off, and six hours, 35 minutes and 21.....20 seconds before retrofire, this is Gemini Control.

END OF TAPE

This is Gemini Control at 66 hours 10 minutes and 30 seconds after lift-off. Gemini 9 is just approaching loss of signal over the Canary Island tracking station and is presently over the north central portion of Africa. The Spacecraft Communicator at Canary said the spacecraft still looked good on the ground. The crew is due to awaken at some 20 minutes, at which time they will begin powering up the spacecraft systems and conduct a purge of the fuel cells. The forecast for the prime recovery are weather stands at scattered clouds at 15 to 20 thousand feet, visiblity at 10 miles, thed wind is out of the southeast at 15 knots, and wave height of 5 feet. At 66 hours 11 minutes and 25 seconds after lift-off, at 9 hours 35 minutes and 18 seconds before retro-fire this is Gemini Control.

END OF TAPE

This is Gemini Control at 67 hours, 30 seconds after lift-off. The Gemini 9 crew was awake when they came over the hill at Carnarvon station. A sleepy sounding Tom Stafford report...responded to the spacecraft communicator's call and the spacecraft communicator reported that the spacecraft was "GO" on the ground. The crew of Gemini 9 conducted a scheduled fuel cell purge during the Carnarvon pass and began their power on check list. They also got a flight plan update of items to be conducted, such as the crew status report at Canary Islands and began stowing equipment, prior to retrofire. They also have an eat period scheduled during this time. We have had a change of pace in the music being piped in on one of the inactive loops here in Mission Control. Run the gamut of the four B's of music, Bach, Beethoven, Brahms and Brass, Tijuiana Brass that is. We have a tape now of the Carnarvon tracking station pass, which we will roll for you now.

CRO — Carnarvon has TM solid.

HOU FLIGHT — Roger.

CRO — Gemini 9, Carnarvon Cap Com. Gemini 9, Carnarvon Cap Com.

SPACECRAFT — Gemini 9, ready to read.

CRO — Gemini 9, Carnarvon Cap Com, we're standing by for your fuel cell purge. Gemini is "GO" on the ground Flight.

HOU FLIGHT — Roger.

SPACECRAFT — Hello Carnarvon, Gemini 9.

CRO — Gemini 9, Carnarvon, we're standing by for your fuel cell purge.

HOU FLIGHT — You might let them wake up Carnarvon.

CRO — Yeah, Roger.

SPACECRAFT — Hello, Carnarvon. Gemini 9.

CRO — Gemini 9, Carnarvon Cap Com.

SPACECRAFT Roger, Carnarvon. Gemini 9, how do you read ?

CRO Loud and clear, how me?

SPACECRAFT Roger, we'll give you purge just a minute.

CRO Roger.

CRO He's purging/one section H2 now.

FLIGHT O.K.

CRO Carnarvon has C-band track.

HOU FLIGHT Roger.

CRO Section two, H2. Section one, 02.

CRO Gemini 9, Carnarvon.

SPACECRAFT Go ahead, Carnarvon.

CRO Could you give me an onboard readout of your H202 pressure?

SPACECRAFT Roger. It's about full scale here at 500.

CRO Roger, copy.

SPACECRAFT It's 60 degrees.

CRO O.K., section two purge. Gemini 9, Carnarvon Cap Com.

SPACECRAFT Go ahead, Carnarvon.

CRO O.K., when you complete your fuel cell purge, will you begin the power up alignment check list.

SPACECRAFT Roger.

CRO O.K., Gemini 9, Carnarvon here. Will you standby to copy a flight plan update.

SPACECRAFT Roger. For the update Carnarvon.

CRO Roger, item one is a node, time 68 47 45, remarks rev 43 130 degrees west, right ascension 18 hours, 44 minutes. A second item, title Canary Island, time 67 37 40, remarks crew status report, then begin stowing equipment.

CRO	Gemini 9, Carnarvon Cap Com
SPACECRAFT	Go ahead Carnarvon, fuel cell purge is complete..are those the only two items?
CRO	Roger, will you put your gyro quantity read switch to ECS 02?
SPACECRAFT	Roger, ECS 02.
HOU FLIGHT	You've got about 30 seconds, Carnarvon.
CRO	O.K., fuel cell 02. Gemini 9, Carnarvon, will you switch to fuel cell H2.
SPACECRAFT	Fuel cell H2.
HOU FLIGHT	Send us an LOS main...
CRO	H2
SPACECRAFT	Roger.
HOU FLIGHT	I thought H2 was busted, Carnarvon.
CRO	Say that again, Flight.
HOU FLIGHT	I thought that H2 was busted.
CRO	We're still looking at it.
HOU FLIGHT	What does it say?
CRO	006 PCM count.
HOU FLIGHT	That's about...
CRO	We've had LOS here.

END OF TAPE

This is Gemini Control 67 hours 10 minutes and 30 seconds after lift-off. Gemini 9 at the present time is over the south central Pacific and within about 15 minutes are so should be entering the contact area of the Eastern Test Range stations. The crew has been awake about 40 minutes now, in that they were scheduled to wake up about 8 minutes before the recent pass over the Carnarvon station. At 67 hours 11 minutes and 4 seconds after lift-off, and 4 hours 35 minutes and 40 seconds before retro-fire this is Gemini Control.

END OF TAPE

Gemini Control here 67 hours 40 minutes and 30 seconds after lift-off. The Gemini 9 spacecraft is presently in contact with Canary Island tracking station, they're getting ready to take some pictures in fact, they'er discussing with the Cap Com at Canary, which island is the tracking station actually on. During the Canary pass they put the temperature probe in their mouth to get oral temperature measurements of both command pilot and the pilot, and they reported also the water usage. Both crew men have had two meals since yesterday, the pilot had 5 hours of sleep and the command pilot had 6 hours of sleep. After taking these photographs they plan to complete the stowage procedure, prior to retro-fire. Just before entering the Canary Island pass, they passed over the Eastern Test Range station and reported there that the platform was aligned and they had the stowage pretty well under way. Spacecraft Communicator Buzz Aldrin, here in Mission Control passed up ball scores to the crew, and other less significant type news. Aldrin jokingly asked them if they wanted a vector so they could go after the ATDA again...cabin pressure aboard the spacecraft is holding at 4.8 pounds per square inch, and in another exchange between Aldrin and Stafford, Stafford said that he might break training and smoke a cigar after recovery. We have a tape recording of the Eastern Test Range pass, let's roll that tape now.....

HOU	Gemini 9 this is Houston.
S/C	Good morning Houston, Gemini 9.
HOU	Roger, how's everything going up there?
S/C	Roger pretty good, we've got the platform align 0 0 0. Computer .....a different up-date mode. The stowage is pretty well squared away.
HOU	Okay, we have a message for you on the computer problem that we had the other day of that start com.

HOU When you get to...switching into the reentry mode, if the computer running light comes on, an alternate procedure is to switch out of reentry, to a spare position which is one detent, clockwise of reentry, and then switch back to reentry mode, 1 second prior to retro-fire.

S/C Okay we've just gone to the reentry mode computer and the light does not come on.

HOU Okay, good.

Gemini 9, Houston.

S/C Go Houston.

HOU Roger, got some ball scores if you're interested.

S/C Go ahead Buzz.

HOU Which ones are you interested in, I've got the whole smear here.

S/C Try the Astros' and the Cubs.

HOU Okay, Pittsburgh 10, the Astros' 5.

S/C You struck out, try again.

HOU Well if I can read this message, it looks like the Reds 5, the Reds 8 and the Cubs 3.

S/C You better go back to sweeping the streets, you struck out again.

HOU That's not very good? Okay had a tornado in Enid, Oklahoma has that one?

S/C We did?

HOU Yes.

S/C How's the weather in Houston?

HOU Looked pretty good when I came in.

S/C Pretty dark out, huh?

HOU Can you see anything of a tropical storm, about, oh a little bit behind you right now. There's supposed to be a storm building south of Cuba called,...it will be called Alma if it reaches that strength.

S/C We're in darkness right now, Buzz, can you give us a latitude and longitude on it.

HOU Oh how about 85 degrees west and 18 degrees north.

S/C ....85 and 18, Okay.
It looks like we pass just about over it next time around.

HOU On the Cubs Gene, they had a double hitter. The first was the Reds 8, and the Cubs 3. The second on Cubs won 9 to 5.

S/C Yipee! On two teams I haven't got many wins this week.

HOU Say again.

S/C I said out of two teams I don't have many wins this week.....Is poor Ed pulling his hair out after yesterday?

HOU Gemini 9, Houston. I didn't read your last transmission,could you give us a propellent quantity please?

S/C Roger. We're reading 0 on the gauge, Buzz, but we still haven't had a drop on fuel regulated pressure so we're not on the volkswagon tank yet.

HOU Okay understand. What's that pressure showing now?

S/C Say again.

HOU What is the pressure showing now?

S/C Roger, 305.

HOU Good enough. Ready to get a vector to go get the ATDA?

S/C Say again. Well we've got a little bit of fuel left, we might go to work on a fourth one.

HOU Might as well.

S/C We had good solid lock on the radar yesterday, of a 170 miles on it.

HOU Yes, that was real good.

HOU Gemini 9, Houston.

S/C Go ahead.

HOU What sort of reading now are you getting on your cabin pressure?

S/C Roger. We're about 4.8.

HOU Roger, that's quite close to what we've got here.

S/C Just below you about 4 9 or 4.8 all night long.

HOU Okay, very good.

HOU Gemini 9, Houston.

S/C Go ahead Houston.

HOU Roger, Gene. Cliff is wondering when he should get the cigars out?

HOU To light up, once you hit the water.

S/C When he sees our smiling faces on the carrier, and I'll buy.

HOU You'll buy is that right?

S/C Right. Tell Chris I might even break down and smoke one too.

HOU I'm not sure I heard that right.

S/C You did.

HOU Okay. We'll be seeing you, perhaps later on this afternoon.

S/C Roger.

HOU Gemini 9, Houston.

S/C Go ahead Houston.

HOU Roger. Like to remind you the crew status report, over Canary, and put the temperature probes in at, oh about 1 minute. We've got 1 minute to LOS.

S/C Roger.

ANTIGUA LOS Antigua.

END OF TAPE

This is Gemini Control at 68 hours and 30 seconds after lift-off. Gemini 9 at the present time is over the Indian Ocean and within about 13 minutes should be acquired again by the Carnarvon, Australia tracking station. Gemini 9's orbit at the present time measures with an apogee of 157.1 nautical miles and a perigee of 145.9 nautical miles, we have now a tape of the recent pass over the Canary Islands tracking station. Let's roll that tape now.

CYI — Carnary has ac aid contact.

HOU FLIGHT — Roger.

CYI — TM is solid and both systems look good, Flight.

HOU FLIGHT — Roger.

SPACECRAFT — Roger, water gun now reads 2925 and the ...both crew members has had two meals since yesterday evening. Looks like it is nice and sunny up in the Canary's today.

CYI — Yeah, it's a lovely day outside here.

SPACECRAFT — We'll snap a couple of pictures.

HOU FLIGHT — Canary, Houston Flight.

CYI — Go ahead, Flight.

HOU FLIGHT — You might ask them for a sleep report, please.

CYI — Rog. We'll do.

SPACECRAFT — Roger, the pilot has had five hours of sleep, the command pilot has had six hours.

HOU FLIGHT — Roger, copy.

CYI — Real good on the ground here, Gemini 9. We'll be standing by.

SPACECRAFT — Roger, we've powered up the platforms, now we're going to take some pictures on this pass and then finish the stowing

CYI	O.K., very good.
SPACECRAFT	Canary's, 9, which Island is the tracking site on?
CYI	That's on the Grand Canary.
SPACECRAFT	Is that the big one in the middle?
CYI	Right, that is the big one.
CYI	We're down at the south end.
SPACECRAFT	Have you got any trees down there?
HOU FLIGHT	O.K., go ahead.
CYI	O.K., he's still looking/real good here, has this water got count position or do you want this thing broken down on a crewman basis?
HOU FLIGHT	It's o.k.
CYI	Roger.
HOU FLIGHT	Kano go remote.
KANO	Kano is remote.
HOU FLIGHT	Roger KIM. TCA , Roger ARK A..... Rog..Roger TM...
CYI	Canary, Cap Com, AFD.
HOU FLIGHT	Go ahead, AFD.
CYI	Could you give us some LOS OVC some?
HOU FLIGHT	LOS OVC, roger.

END OF TAPE

This is Gemini Control, 68 hours, 10 minutes and 30 seconds after liftoff. Gemini 9 is just approaching the Carnarvon, Australia, tracking station; and hopefully, we'll be able to cut in on the conversation between the spacecraft and the station. Meanwhile, here in Mission Control, the countdown clock numbers are getting smaller and smaller. It stands now at 3 hours, 35 minutes and 51 seconds before retrofire. Early risers in the Houston area may get a chance to see Gemini 9 due south about 40 degrees above the horizon toward the end of the forty-fourth revolution at 6:13 CST. The slant range will be about 210 miles. During the final revolution, it'll be much nearer Houston, but there will be too much sunlight at that time to see the spacecraft. We're still standing by here for Carnarvon acquisition. We're still about two minutes away. Still no word out at Carnarvon. We should be hearing confirmation of telemetry acquisition momentarily. Shortly thereafter, the spacecraft communicator will attempt to raise the spacecraft. Carnarvon just reported that the acquisition aid equipment at that station had acquired the spacecraft. As yet, the spacecraft communicator has not called the spacecraft.

CRO Gemini 9, Carnarvon.

S/C 9, Carnarvon.

CRO Rog. We don't have anything for you. If you need anything, give us a call.

S/C Will do. Thank you, Bill.

CRO Flight, Carnarvon.

HOU FLT Go ahead.

CRO You're going to have to bear with us on these .....

Well, apparently, Carnarvon station didn't have much traffic to pass up to the spacecraft. We'll listen for a while longer. This pass over Carnarvon lasts six minutes and 46 seconds.

CRO Flight, Carnarvon.

HOU FLT Go ahead.

CRO OK. Should be getting our summaries now.

HOU FLT Roger. How does TR look to you, Bill?

CRO Just getting a back room check. Stand by. OK. We're right with Canary. It's like about 125 of a second

HOU FLT OK.

CRO The VW tank is still fitting a 300.

HOU FLT Rog.

CRO We have pressure 48.

END OF TAPE

This is Gemini Control. Apparently this will be a very quiet pass over the Carnarvon station. So at 68 hours, 16 minutes and zero seconds after lift-off and three hours, 29 minutes and 41 seconds until retrofire, this is Gemini Control.

END OF TAPE

This is Gemini Control Houston at 69 hours 10 minutes into the flight. Last night the pilot Gene Cernan logged about 5 hours of sleep, described as fairly sound, the command pilot 6 hours of sound sleep. Both crew members have had breakfast, they were having breakfast when they came over Carnarvon on this last pass. Meanwhile the recovery people are stirring busily this morning in their room off the main floor of the Mission Operations Control room. They've been checking in with some helicopters down in the 46-1 landing area, and have pronounced it, pronounced the weather adequate for a recovery operation this morning. We have some conversation between the ground and crew, fairly minimal conversational pass, but we do have some conversation as they came across the states, they're now over mid-Atlantic. We'll play this for you now.

HOU	Guaymas go remote.
GYM	Guaymas is remote.
HOU	Gemini 9, Houston.
S/C	Houston, Gemini 9.
HOU	Good morning Tom, we're standing by.
S/C	Roger.....garbled....check on stowage,/we knocked off the electric time circuit breaker for about 1 second, check (garbled)
HOU	We're not reading you to well, wait till we get a little more elevation here.
S/C	Okay.
HOU	Texas go remote, Guaymas local.
TEX	Texas remote.

HOU Gemini 9, Houston. You say you found your electronic timer circuit breaker knocked off for a little bit, and it's reset?

S/C Roger. I thought I better knock it off, but got it right back on, probably just a second or so off. We haven't reached that ....clock.

HOU We'll have to up-date that anyway.

S/C Okay.

S/C Houston, Gemini 9.

HOU Go ahead 9er.

S/C Roger, we should be approaching that tropical storm about now, we'll pitch down and see if we can take a look at it.

HOU Okay, that's the one in your landing area.

S/C It's just a mile in the landing area though.

HOU Roger, we interview approaching 250 on your VW tank, when you get to that value, you might arm it.

S/C Roger.

S/C Houston, Gemini 9 we're arming the volkswagon tank at this time.

HOU Okay Tom.

S/C Really works good.

HOU Yes, we have it pressure coming up.

HOU Houston is about a minute from LOS at Bermuda.

ANTIGUA LOS, Antigua.

This is Gemini Control Houston now for a close look at our weather situation this morning, we'll get a direct report from our meteorology section here in the Control Center.

The Gemini 9 crew will over-fly a tropical disturbance in the Gulf of Mexico, located near latitude 18 degrees north, longitude 85 degrees west, this morning., which they will be over-flying at approximately day-break and they will be able to sight some of the clouds in the vicinity of the disturbance.

The out-look for the, in the mission area, in the western Atlantic, is the last reports we had from the carrier Wasp, indicate southeast winds, approximately 7, correction approximately 7 knots, with 1 foot waves, some swell in the area;..scattered clouds at 2,000 feet, with a higher over-cast.

END OF TAPE

This is Gemini Control Houston, 69 hours, 40 minutes into the flight. The major preretro update is expected to come in the next pass across the states. The spacecraft, presently, passing slightly east of Tananarive, moving across the Indian Ocean, right now. Our fuel history shows that approximately 12 pounds of useable propellant remains onboard. This is about twice the amount needed for the final attitude adjustment setting up the retro maneuver.

We have some tape conversation back from the Canary pass, wherein Tom Stafford, himself a former...a graduate of the Naval Academy, suggests that the Captain of the Wasp, put the big ship, as he put it, right on the landing point and Tom would come....right in the area. Here is that conversation.

CYI	Canary's has ac aid contact.
HOU FLIGHT	Roger Canary, how's it look?
CYI	No TM yet in it. We have TM solid, Canary
HOU FLIGHT	Roger.
CYI	C-band track. Houston Flight, Canary.
HOU FLIGHT	Go ahead, Canary
CYI	O.K., we are showing him go except for Charlie,... Charlie's zero three left suit inlet air temp. at full scale high. We're checking at the groundspace.
HOU FLIGHT	Roger.
AFD	Canary's, AFD.
CYI	Go ahead, AFD.
AFD	That was Charlie able zero three left suit pressure.
CYI	Negative, it's Charlie Charlie's zero three.
HOU FLIGHT	O.K., fine.
CYI	It is confirmed on the groundspace at all scale high..
HOU FLIGHT	Roger.
CYI	Gemini 9, Canary Cap Com. You are looking good on the

CYI ground. We're standing by.

SPACECRAFT Roger, Canary , we're just taking a few pictures here.

CYI Roger. Canary's has LOS. All systems are go.

HOU FLIGHT Roger, Canary.

TEX Kano go remote.

KANO Kano is remote.

HOU FLIGHT Gemini 9 Houston standing by.

SPACECRAFT Roger, Houston, loud and clear.

HOUF FLIGHT You're the same.

SPACECRAFT Houston, Gemini 9. Would you relay the word to Captain Hartley to have the Big Ship right on the landing point?

HOU FLIGHT You bet we will.

SPACECRAFT O.K.

HOU FLIGHT Tom, your IVI versus Bank angle chart is...is satisfactory for this orbit.

SPACECRAFT Roger.

HOU FLIGHT Gemini 9, Houston approaching LOS.

TEX Tananarive go remote.

TAN Tananarive remote.

HOU FLIGHT Houston is one minute from LOS at Tananarive.

This is Gemini Control. Where our orbit this morning is showing 157 nautical miles by 145.9...157 by 145.9, we are on the 44th revolution around the earth. The 46th orbit, this is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 70 hours into the flight, right on the button. Over Carnarvon a few minutes ago, the Gemini 9 crew got a reentry up-date, they were also advised of the weather in the landing recovery area, here is that conversation....

CAR Carnarvon has act-aid contact.

HOU Roger, Carnarvon.

CAR Carnarvon has telemetry solid.

HOU Roger.

CAR All systems looking good.

HOU Roger.

CAR Gemini 9, Carnarvon.

S/C Go ahead Carnarvon.

CAR I've got your reentry information for you when you're ready to copy.

S/C Roger, coming in very weak here.

CAR I said we have your reentry information for you when you're ready to copy.

S/C Ready to copy.

CAR Okay this is for 46-1, your now in nominal RMI's are' aft, 298, at down 112. Tank angle initial reflection at 0 is plus 189, 5 5 is plus 45, and 9 0 is set at 5.Pitch gimbal at 400K at 9 0. You want have a lighter rise in that retro but you will have 400 KC. Begin black-out at 22 plus 08. Again black-out 27 plus 05. RAT of drogue, 28 plus 47. RAT main, 30 plus 21. Use your back-up

CAR curves for bank angles based on 146 circular.

HOU Carnarvon Cap Com Houston Flight.

CAR Go ahead Flight.

HOU Roger, in your read-up that's a minus 75, minus 75.

CAR Roger.

S/C Carnarvon this 46-1, understand the RVI are 298, and 112, down range ...depression 0 degrees plus 1 8 9er, at 5 5 degrees at 45, ...9er degrees at 75.

CAR That's minus 75.

S/C Minus 75, Roger. and pitch gimbal is 90 degrees.

CAR Roger.

S/C Entering TRV of ....correction there 22 plus 0 8, S-bank out at 27 plus 05, and drogue at 28 47, and main at 30 plus 21.

CAR That's the sum.

CAR We've got one other thing here too.

S/C Go ahead.

CAR Okay the clouds are 2,000 scattered, visibilty 8 miles, your winds are 120 at 12, the waves are 2 to 3 feet, your altimeter is 30.12, and the aircrafts in the area are air-gloss one and air-gloss two.

S/C Roger, altimeter is 30.12, and gloss 1 and gloss 2.

CAR And the Wasp is in there.

S/C I hope he's in there.

CAR Have you checked your main batteries yet?

S/C About an hour a go, I'll give them another check.

CAR Okay. I'd like to get the voltages off you.

S/C Okay, you want the reading?

Okay number one is 22.2,

CAR Rog.

S/C Number three is 218.

CAR Roger.

S/C Four is 23.

CAR Roger, got them all.

HOU What did you get in number 2, Bill.

CAR ...24.2

HOU Bill did you give them that weather data?

CAR That's affirm.

CAR Looks real good.

S/C Carnarvon, Gemini 9.

CAR Go ahead 9.

S/C What is the .....on time hack,.....

CAR Roger, I'll give you a mark at 69.56.00 in about 30 seconds. Standby 3, 2, 1, Mark. 56 minutes.

S/C Roger, roll.

CAR Flight, Carnarvon

HOU Go, Bill.

CAR I've got TR lagging by two and a quarter seconds now.

HOU We're going to up-date that over the spacecraft.

CAR Okay.

HOU Keep watching it for us.

S/C Give me a mark in 5 seconds.

CAR	...3, 2, 1, mark.
CAR	We're 40 seconds LOS Gemini 9.
S/C	Roger.
CAR	C-Band LOS.

END OF TAPE

This is Gemini Control Houston at 70 hours, 15 minutes into the flight. The Canton Islands station acquired the spacecraft at 70 hours and eight minutes. There was no voice communications, simply a tagging up. Guaymas will acquire Gemini 9 at 20....70 hours and 24 minutes into the flight about nine minutes from now. The next pass around, Canton Island will be the prime station/for of course retrofire occuring within the Canton Circle. The precise coordinates on the retrofire maneuver.....standby one moment.....one degree 21 minutes south latitude, 179 degrees and 19 minutes west longitude. In other words, virtually on the equator and just a few minutes west of the International Dateline.

At 70 hours and 16 minutes into the mission, this is Gemini Control Houston.

END OF TAPE

This is Gemini Control at 70 hours and 36 minutes into the flight. Gemini 9 is moving across the Texas area. Tom Stafford has just armed the reentry control system thruster rings. They check out very well. He advises in all modes he is maneuvering the spacecraft with these RCS rings, ring A and ring B. They do work well. They contain 34 pounds of useable propellant in each ring. The pressures are both on each ring are up around 2500, which is exactly what they should be. Here is the conversation as the spacecraft moves across the states.

HOU	Guaymas go remote
GYM	Guaymas remote
HOU	Gemini 9, Houston
S/C	Go Houston, Gemini 9
HOU	OK we got your retro pad when your ready to copy
S/C	Standby one
S/C	This is Gemini 9, I'll go ahead and arm the RCS rings at this time. Go ahead ....(garble)....
HOU	Have you armed it yet Tom?
S/C	Not yet Neil.
HOU	OK hold off until we get over - a couple of minutes here and we'll get to Texas and we'll have TM
S/C	Give me a buzz when you want me to arm it
HOU	OK
S/C	Go ahead with the pad Neil
HOU	Ok this is 46-1. GETRC 71:46:44, 400K, 19 + 52, RETRB 25 + 42, bank left 50, bank right 50. I

HOU think you've got the rest of the stuff on that page.

S/C Yes I've got it
OK, 46-1, GETRC of 71:46:44, 400K at 19 + 52, first bank at 25 + 42, bank left 50, bank right 50.

HOU That's right. I got your MDIU stuff when you are ready to copy

S/C Go ahead

HOU OK. Address 03 - 64 00 6, address 04 - 34 77 5, address 65 - 01 88 1, address 66 - 34 48 7, address 07 - 65 55 6, address 08 - 40 83 2, address 09 - 15 29 5, address 10 - 02 77 1, address 11 - 28 50 0. Go ahead

S/C Roger. 03 - 64 00 6, 04 - 34 77 5, 65 - 01 88 1, 66 - 34 48 7, 07 - 65 55 6, 08 - 40 83 2, 09 - 15 29 5, 10 - 02 77 1, 11 - 28 50 0.

HOU That is correct

S/C Do we have that load in the computer at this time?

HOU Negative , you do not. Your computer is not loaded yet.

S/C All right

HOU OK that bank right was 60 degrees. It was bank left 50, bank right 60.

S/C That's bank right 60

HOU OK, we're ready to transmit the load now.

Are you all set.

S/C We're all set.

HOU OK. Transmitting now.

Texas go remote

TEX Texas remote

HOU Guaymas local

HOU Did you get a light on that? Did you get a light on that Gene?

S/C Affirmative.

HOU OK, we're ready for you to arm RCS, when your ready.

S/C Roger. Arming RCS now.

HOU And, we're ready for you to turn the batteries on.

S/C Coming on. For ring C I read 2500, ring A 2450.

HOU Roger we agree with that.

S/C C batteries on and we have a light.

HOU OK. We'd like to have you check your peroxide temperature and pressure please.

S/C OK. Peroxide pressure seems to have dropped to 490 , it was at 500 and our temperature is about 65.

HOU Roger, we copy. Put your antenna select to reentry please.

S/C Antenna is on reentry.

HOU OK. Your load looks good based onthe computer readout on the ground.

S/C Roger. I'm checking again

Is RCR sync Neil.

HOU Say again

HOU Ok niner we're ready to transmit TR.

S/C OK, we're ready for it soon as we get the light

HOU OK. Looks ok on the ground.

S/C OK and the load checks out good

HOU Good

S/C Houston, Gemini 9. Hope RCS meets A and B checkouts in all control modes.

HOU Roger Tom.

S/C We have just completed ....(garbled)...at this time.

HOU Roger

S/C Neil old chap, is Captain Hartley guaranteeing us the big boats on the spot?

HOU We couldn't copy that Tom.

S/C Roger. Is Captain Hartley guaranteeing us that the big boat is going to be on the spot?

HOU I think that you'll know where you are landing better then they know where they are.

S/C Roger

Houston, Gemini 9. Do you want me to leave the reads on or turn them off at this time?

HOU Yes, let's leave them up for the rest of the time.

S/C OK.

ANT AOS Antigua

HOU Niner , Houston. Do you want to give us a status report on your reentry stowage and pre-retro checklist?

S/C Roger. We have completed all the reentry stowage and we have completed the - all the pre-retro check-list and standing by now for TR...(garble)..

HOU Roger.

Bermuda go remote

S/C Houston, niner

HOU Go ahead

S/C Pass GET time hack please Neil.

HOU OK. GET time hack is 70:42:10 on my MARK. MARK 70:42:10

S/C We're right on.

CYI Canary Cap Com AFD

HOU Houson, go ahead

Go ahead

S/C Roger. You might have CS check our water quantity pressure. We can't get a full charge in the gun anymore.

HOU Roger understand. You can't get a full charge to the gun. We're about to get to LOS. We'll probably talk to you at Canary.

S/C Roger.

HOU Canary Cap Com AFD

CYI AFD Canary go ahead

END OF TAPE

This is Gemini Control Houston. We're 70 hours, 54 minutes into the flight. We're 51 minutes and 45 seconds away from retrofire. With the spacecraft over Canary the flight plan calls for the crew to begin their pre retro check list. We suspect that Tom Stafford and Gene Cernan have probably already completed all the items onboard. They armed their RCS rings across the tates last time. They steadily kept ahead of the flight plan by some 10 to 15 minutes. We have tape conversation as the spacecraft moves through Canary area and here it is.

CYI	Canary has ACQ aid contact. Canary has C-band track. TM solid. All systems are go flight.
HOU FLIGHT	Roger, Canary.
CYI	He still looks good flight.
HOU FLIGHT	ROger.
CYI	Gemini 9, Canary Cap Com. We have you go on the ground and we're standing by.
S/C	Roger Canary. .....(garbled).....Everything is go.
CYI	Very good.
AFD	Canary Cap Com, AFD.
CYI	Go ahead, AFD.
AFD	His TR should be reading 55 37 654.
CYI	Roger, we understand.
AFD	Okay, you can check it out on the spacecraft. We just updated TR.
CYI	Roger.

CYI — AFD, Canary, the spacecraft is lagging by 1/8 of a second.

HOU AFD — Roger.

CYI — Flight, Canary

HOU FLIGHT — Go ahead, Canary.

CYI — Okay, our PCO2 is going up sort of rapidly. We're up to 50. We're up to 2.16, it's gone up from a 187 in about five or ten seconds here. It's up to 2.13 now, flight.

HOU FLIGHT — Okay, Surgeon says he's not concerned about that at this time.

CYI — Roger, understand.

HOUSTON FLIGHT — Roger, keep reporting the values to us and get it in your post pass message.

CYI — Roger, Flight, will do.

2.46 flight.

HOU FLIGHT — Roger.

CYI — 2.54 and he's still go.

HOU FLIGHT — Canary Cap Com, Houston Flight.

CYI — Go ahead, Flight.

HOU FLIGHT — Stand by one.

CYI — It seems to have stabilized now flight. The last three readings were 254.

HOU FLIGHT — Okay.

CYI — And we have new increase in respiratory rates.

HOU FLIGHT — Okay, lets not bother the crew with it then,

CYI — Roger. We have one minute to LOS, flight.

CYI — Canary has LOS, Flight.

HOU FLIGHT — Roger, Canary.

CYI — It is 2.61 on PCO2 but we don't know if there is a drop out or not.

HOU FLIGHT — We feel it may be associated with the crews closing of the tape recorder power circuit breaker in the pre retro check list there.

CYI — Very good.

HOU FLIGHT — Okay, Harold, see you back in Houston. We're all done over there.

CYI — Okay, Flight, thank you.

KANO — Kano's remote.

HOU — Gemini 9, Houston, standing by.

S/C — Roger, Houston.

HOU FLIGHT — Carnarvon Cap Com, Houston Flight.

CRO — Houston Flight, Carnarvon Cap Com.

HOU FLIGHT — Roger, Bill, EECOM wants me to advise you the acq aid beacon is now on.

CRO — Okay.

HOU FLIGHT — I assume you monitored the discussion on the PCO2 sensor.

CRO — Roger, they suspect the tape recorder power circuitry.

HOU FLIGHT — That's affirmative.

CRO — Okay.

AFD — Carnarvon, AFD, all we have for you now Bill is the timer hack in twnety minutes.

CRO — Rog. The check list is completed now, rog?

AFD — Affirmative. And they're just coasting along waiting. From when we copied he must be down to TR minus five. Its as far down as he can go.

CRO — Rog.

HOU FLIGHT — We'll get you an MR but I just thought I'd brief you, since the flight plan is kind of goofed up.

CRO — Okay.

END OF TAPE

GEMINI 9A (2) MISSION COMMENTARY, 6/6/66, 6:54 A. M.

This is Gemini Control Houston at 71 hours, 14 minutes into the flight. We're 32 minutes and 38 seconds away from retrofire. Gemini 9 is over Tananarive and we have this conversation.

CRO — AFD, Carnarvon.

AFD — Go ahead, Carnarvon.

CRO — I wonder if you could do me a favor? Would you repeat the translation message for the last valid mode that covered the spacecraft and put a header on it?

AFD — Didn't get it?

CRO — That's negative

AFD — What do you want on that ET Bill?

CRO — I'd just like to have it sitting here Flight.

HOU — Roger the crew hasn't checked it out, we'll get you that copy out ASAP.

CRO — Ok

HOU — I was going to say if you needed anything fast I could give you the numbers by voice. Tananarive go remote.

TAN — Tananarive remote.

HOU — Gemini 9 Houston standing by

S/C — Roger Houston. We're still aligning plot points and taking it easy.

HOU — Roger. OK Bill, do you remember the MI on the OBC data that Grissom needs?

This is Gemini Control Houston. It is 71 hours 24 minutes into this flight. Twenty-two minutes and 30 seconds away from retro fire. As we started to talk the Carnarvon station raised the spacecraft and Bill Garvan the Capsule Communicator there is talking with Gene Cernan. Let's go now to the spacecraft and monitor this conversation.

CRO 3, 2, 1, mark.

S/C Roger, we are right on event timer and also on indicator. We are coming down real well.

CRO Okay.

S/C ...read it to you at this time.

CRO Roger.
We don't have anything else for you. We will be standing by. Have a good trip home.

S/C Okay, thanks for all the help, Bill.

CRO Roger.

HOU Why don't you tell them you are taking out citizenship papers over there.

CRO Roger, Flight Carnarvon.

HOU Go ahead, Bill

CRO Okay, my TR differential here is spacecraft is lagging by 125 with an occasional 250.

HOU Roger. 1/8th to a quarter.

CRO Rog.

HOU That is a lag, right?

CRO That is lagging.

HOU Sounds good enough for government work.

CRO Roger, we got the acq aid beacon too.

HOU Okay. Tracking C-Band?

CRO Not yet, takes a little while yet.

Flight, Carnarvon.

HOU Go, Bill.

CRO We see the beacon that his the C-Band we don't have track yet. Okay, we have got C-Band track.

HOU Roger.

This is Gemini Control Houston. Apparently a rather quiet pass. Tom Stafford, we feel sure, is setting up his retro attitude. This is an attitude which means blunt end forward. He will be pitched down at 20 degrees at retro fire. Sixty seconds before retro fire he will check this attitude very carefully and hold it 20 degree pitch down, other rates yaw and roll at zero. Simultaneously Gene will press three switches on his side of the cockpit one to cut the fuel lines to the adapter, guillotine action severing the fuel lines. A second button separates the electrical connections, again guillotine that cuts through and pinches off the wires and a third button which will separate the equipment adapter, the after portion of the Gemini spacecraft leaving only the retro adapter attached. At 30 seconds before retro fire, Stafford will arm his retro squibs, energize

the circuits to fire his four retro rockets. At T-10 seconds before retro fire, Cernan will arm the automatic retro fire and will energize it by starting it. Precisely at retro fire Gene Cernan will start a stop watch and the command pilot will push the computer, in the start computer position. At retro fire plus one second Cernan should press a button which will manually fire the retros should any malfunction take place in the automatic sequence. He will take a quick check on the computer and he will observe the horizon very carefully during retro fire phase. Shortly after retro fire, we should hear from the pilots on their IVI readout, their incremental velocity indicator, a digital clock or dial arrangement in the spacecraft and the values we are looking for should sound like this, aft 298, that is a Delta V, they are taking out the spacecraft 298 feet per second and the down vector should read 112, one one two. We will see how close we come to that, the retro fire maneuver itself is to take place at an altitude 153.7 nautical miles, one degree 21 seconds south of the equator at 1.79 degrees 19 minutes west longitude. Very close to the Canton Island site. Present retro fire time is scheduled for 71 hours 46 minutes and 44 seconds into the flight. We presently show 71 31 minutes and 32 seconds. This is Gemini Control standing by for any additional conversation from Carnarvon

CRO Carnarvon has one minute until LOS.

S/C Roger, Carnarvon.

CRO Carnarvon has LOS.

HOU Roger, Carnarvon, we will keep you briefed by twix.

END OF TAPE

This is Gemini Control Houston. We're 11 minutes and 14 seconds away from retrofire. That event programmed for 71 hours, 46 minutes and 44 seconds into the flight. 19 minutes and 52 seconds after retrofire, we should have reached the 400,000 foot mark over the western United States. The blackout period is predicted for 22 minutes and 8 seconds after retrofire, or at an elapsed time of 72 hours and 8 minutes, 51 seconds. The blackout period will end at 27 minutes and 5 seconds after retrofire. Our drogue chute should come out at 28 minutes, 47 seconds following the retrofire maneuver. The main chute at 30 minutes, 21 seconds. The landing itself at 34 minutes and 21 seconds after retrofire. We expect fairly good communication today particularly in the landing area because we are landing relatively close to Grand Turk Island. The landing point is 330 nautical miles almost due East of the Cape. During the latter portion of the letdown, once the crew is approximately 300,000 feet above the surface of the Earth and coming over Texas, they will begin to feel some steering authority, in the Gemini spacecraft. The pilots look forward to this period of the flight not just because it means the end of a mission, but it does present one of the more difficult piloting tasks. We've controlled all the landing - Gemini landings - with the one exception of Gemini 4 which came in Mercury fashion or rolling reentry. This morning the computer works and the pilots are prepared to do a steerable landing. They will be blunt end forward

and heads down as they come into the steering area which extends from roughly 300,000 feet down to about 180,000 - 175,000 feet. Their maneuvers will - are planned as a bank left maneuver, 50 degrees, followed by an immediate bank right, 60 degrees. And when they do these maneuvers they will feel some yaw authority in the spacecraft. We're now 8 minutes and 32 seconds away from retrofire. This is Gemini Control Houston.

END OF TAPE

GEMINI 9A (2) MISSION COMMENTARY, 6/6/66, 7:24 A M.

This is Gemini Control Houston, 71 hours, 44 minutes into the flight. At about 30 seconds ago, the Canton station acquired the communication. It's a little gravelly, somewhat better though than the communications were yesterday. We're one minute and 52 seconds away from retrofire. One minute, 23 seconds away. At the one minute mark, Tom Stafford will hold the rates very steadily, 20 degrees pitch down attitude. Other rates will be zero. At the same time, Gene Cernan will cut the fuel lines, the electric lines, and finally separate the equipment adapter. Mark, 60 seconds to retrofire. Sep OAMS, sep elec and sep adap, Tom Stafford advises. Those items have separated from Gemini 9. Mark, 30 seconds from retrofire. Ten seconds away, 8, 7, 6, 5, 4, 3, 2, 1 - Retrofire! Counting up now at 14 seconds from retrofire, we had no report from Gemini 9. Four good retros. Gene Cernan sung it out. Four good retros. 32 - 33 seconds after retrofire. 296 - his incremental velocity indicator shows. The plan was for 298. He was within two feet from the planned aft reading. His down indicator showed 125. The plan was 112. He's in excellent position. We still have no confirmation on retro jettison, the retro adapter itself. Now Stafford does confirm that the retro adapter has separated. We're two minutes and 13 seconds after retrofire. We're 31 minutes and 42 seconds from splash. Over Hawaii Tom Stafford is to give the Hawaii station a detailed estimate on the retro maneuver. He will verify again his IVI readouts, and he

will estimate his attitudes during retrofire. He will also advise us whether there was an auto - automatic - or a manual retrofire. We suspect it was automatic. Three minutes, 26 seconds since retrofire and no additional conversation. Hawaii should acquire the spacecraft in approximately 20 seconds. Cernan advises that the post retro check list has been completed. The post retro check list is complete. We're not certain whether that communication came via Canton or Hawaii. He should be moving out of the Canton acquisition area, and we are likely communicating with the spacecraft, or will be, via Hawaii. Now the spacecraft is over Hawaii. Here's how the conversation is going.

S/C	Roger, we're counting now on the event timer but go ahead and give us a hack at six minutes, Hawaii.
HAW	Roger, will do. 3 2 1 - Mark. Gemini 9, Hawaii. Gemini 9, Hawaii.
S/C	Roger, Hawaii. We are inverted and we have a moon light horizon.
HAW	Roger, were you with me on the mark?
S/C	We were right on.
HAW	Roger. Did you have an auto retro?
S/C	Sure did. And the IVI's I passed on to Houston are now 296 aft, 4 right, 125 down.
HAW	Roger, is your attitude normal?
S/C	Right on the button.

Over the Hawaii station, Dr. Berry's heart scope here is showing Stafford with a heart rate of 80 beats per minute. Cernan's heart, 100 beats per minute. He had estimated that the rates might get up to 130 - 125 to 130 during retrofire. Of course, we have no valid - vital information such as heart information via the Canton station. That will have to come later from onboard tapes. We'll go back and monitor now for any additional conversation via Hawaii.

END OF TAPE

HAW Gemini 9 Hawaii. We have one minute to LOS.

Standing by.

S/C Roger Hawaii.

HAW Roger

This is Gemini Control. We are ten minutes away, ten minutes since the retrofire maneuver and Hawaii has Loss of Signal. The spacecraft has moved south and east of the Hawaii ring. California should acquire at 72 hours and one minute into the flight, about four minutes from now. We are at 23 minutes, 30 seconds away from splash. In the recovery area two weather reconnaisance aircraft have returned to the carrier Wasp; they report no significant weather disturbances in the immediate area; they report a thin overcast at about 2,000 feet and no indication of rain. This is Gemini Control Houston.

This is Gemini Control Houston. We are 15 minutes since retrofire, and Neil Armstrong has just put in a call to Gemini 9 via California. Elapsed time is 72 hours, two minutes. No additional communication from the spacecraft, we are presently showing an altitude of 80 nautical miles, 80 nautical miles as it starts its final sweep across the states. Seventeen minutes and 37 seconds to splash.

END OF TAPE

This is Gemini Control Houston. We have some minor revisions on some of our events to come here. The blackout period now is estimated to begin at 22 minutes and one second after retrofire. We presently show 18 minutes and 8 seconds. The next event is the end of blackout, 27 minutes and 7 seconds after retrofire. The drogue chute should deploy at 28 minutes, 43 seconds. The main chute at 30 minutes and 8 seconds. Splash still predicted for 34 minutes, 21 seconds. Neil Armstrong our capsule communicator on this shift is advising Gene Cernan of the times that I just relayed to you. Present altitude 60 miles. Spacecraft coming across the White Sands area.

(PAUSE)

Spacecraft now is slightly below 400,000 feet. We're at 20 minutes and 15 seconds after retrofire. One and a half minutes from now we should begin the blackout period.

(PAUSE)

Stafford advises he is rolling left 50 degrees. This will be followed by a roll right maneuver to 38 degrees.

(PAUSE)

They are coming up on the begin blackout period at 22 minutes and one second. We presently show 21 minutes, 30 seconds since retrofire. Present altitude shows 40 miles. Now we are into the blackout period. Twenty two minutes (22). Spacecraft is almost directly over Houston.

(PAUSE)

The end of blackout period is predicted for 27 minutes and 7 seconds after retrofire. That would be about 4 minutes from now.

(PAUSE)

After a look at the data, Gene Kranz the Flight Director's assessment of the retrofire was "it looks like we had a pretty good one." He is

quite satisfied with all the data he's seen, reports from Hawaii, additional tracking from White Sands and we look like quite a nominal reentry at this point. We are about 10 minutes away from splash. Three minutes away from the end of blackout period.

(PAUSE)

We're at two minutes away from the end of blackout.

(PAUSE)

The present altitude is about 30 miles.

(PAUSE)

This is historically one of the quietest periods during any given mission. Todays flight is certainly no exception to that precedent. Flight Dynamics again assures us that all the reentry tracking data looks very close to the nominal.

(PAUSE)

We're advised that the Wasp has established radar contact with the spacecraft.

(PAUSE)

Twenty-seven minutes, 16 seconds into the flight. The Cape downrange stations have acquired signal from the spacecraft beacon, still no voice contact. Neil Armstrong has put in a call and Tom Stafford is advising that everything went well throughout the blackout.

END OF TAPE

S/C We are rolling to the left.

He advises that he is doing another left roll. He is pulling four g's. We don't notice any change in his voice level and even under that g load. Five minutes 35 seconds to predicted splash. Spacecraft is about at 50,000 feet at the point where the drouge should be out.

We have you on radar and can see...

Twenty-nine minutes since retro fire.

S/C The drouge is out.

The drouge is out. Stafford confirms that the drouge chute has deployed. And on one of the down range aircraft pilots in comminication with Gemini 9, the prediction from the spacecraft is they will be two and a half miles long. Gene Cernan has just advised one of the down range aircraft, two and a half miles long. Four minutes and 15 seconds from splash. Thirty minutes since retro fire. We are coming up on main chute one. Gene Cernan now revises his estimate 3.3 miles long, he indicates. Meanwhile Gene Kranz suggests here as soon as the main chute drift takes effect, it will revise Gene's estimate. Thirty-one minutes since retro fire and since the wind is from the east the betting here is that the easterly wind will float the spacecraft right back to the aiming point. We will see how this comes out. We have had loss of signal from the Cape station since the spacecraft is now down very close to the water. We did not get a confirmation on main chute. We have a picture. This picture is being portrayed

in one of our big front display screens here in the control center and everybody is up on his feet watching it. Tom Stafford says "Have you got us on sight" and one of the recovery troops advised they had them - they had the spacecraft in sight and suggested that the whole world had it in sight as well. (Pause) Stafford advises that he would like to remain in the spacecraft, they will be hoisted aboard while still in the spacecraft. Flight Director now joshing the retro officer and asking him if he took into account that easterly wind, which apparently is going to put the spacecraft down very, very close to the USS WASP. (Pause) The WASP advises that the R & R section, the forward portion of the spacecraft has hit the water. (Pause) The WASP advises they are standing by for splash. There is splash. Thirty four hour - 34 minutes and 14 seconds after retro fire. We would estimate that the splash occurred 72 hours and 14 seconds after launch. (Pause) The WASP is closing on the spacecraft at a speed of 14 knots. (Pause) From the deck of the WASP we get an estimate of four and a half miles, 4 1/2 miles from the spacecraft. (Pause) From the deck of the WASP we are advised that the - they estimate the recovery in approximately 45 minutes. They will not approach the spacecraft until the collar is attached. We have just gotten word that we have gotten a thumbs up to the helo in the area from the crew. The astros appear to be in good shape. The prime helicopter out there this morning is being piloted by Lt. Cmdr. J. M. Perrengon of North Kingston, Rhode Island. The swimmers

are now deployed. They are in the water and will begin the process of attaching the flotation collar which frequently - which normally takes about 30 minutes.

END OF TAPE

The swimmers have been in phone communication, hard line communication, with the astronauts and they have gotten a thumbs up indication at the window. The second helicopter in the area is being piloted by Lt. Commander Gerald M. Webber, of Jamestown, North Dakota. The carrier advised that the collar is inflated and they estimate their present distance -- Wasp to spacecraft distance -- at about three miles.

The communication circuits are really humming from the recovery area.

Present estimate spacecraft to Wasp is 5700 yards. Swimmers busy out there with the collar. Their first assignment, however, is to get a visual indication of the conditions and they got that with two big thumbs raised in the air.

The Wasp is moving now at 18 knots toward the spacecraft. The WAsp now is presently estimating they will be along the spacecraft at 14 minutes after the hour, some six to eight minutes from now.

From the deck of the Wasp, we are told that the astronauts are opening the hatch at this time.

Tom Stafford is standing up in his seat waving to the swimmers.

This is Gemini Control Houston. Now Gene Cernan also is standing up in the spacecraft. The three swimmers working busily around it are Lt. JG Ben Bowman, Third Class Daniel Frazier, and Seaman Roger Bates. Tom Stafford is shaking hands with one of the swimmers now congratulating them on the good job they've done.

This is Gemini Control Houston, the consensus here this morning is, based on past missions, that these communications have been nothing short

of outstanding. We cannot recall a mission where we had more communications, it was of good quality all the way in. Tom Stafford was talking to the Recovery forces as he came over the east coast of the United States. He was in almost constant communication the last 300 miles to the splash point about 330 miles off the coast. And, the information flow has been excellent.

END OF TAPE

This is Gemini Control Houston. Without searching any records, we suspect that the spacecraft came down closer to the prime recovery ship than any previous flight - any of the previous 13 United States Manned space flights. This the 13th, of course. The landing point, somewhere between three and four miles. That will have to be refined. We recall that Gordon Cooper on his first Mercury flight landed within five miles, approximately four and a half miles, from the carrier out in the Pacific also, and he was observed on main chute as he descended to the water. Alan Shepherd in his first manned space flight was seen and watched as he landed, came down main chute. Several other flights have been observed by aircraft and, of course, all of them have been followed on radar as they came in, but this appears, immediately, to be the closest we've ever come to the prime recovery ship.

END OF TAPE

This is Gemini Control Houston, during this lull before the pickup. Everyone, all the Flight Controllers here in the Control Center are watching television like we suspect everyone else is. Someone just passed the word on the Flight Director's loop that the Gemini X simulations would begin at 3:00 this afternoon. The remark was in jest I'm sure but the activities for Gemini X will pickup immediately. Probably not before tomorrow morning though.

(PAUSE)

END OF TAPE

This is Gemini Control Houston. The spacecraft is presently three hundred (300) yards off the port bow of the Wasp. We still don't have an estimate as to when the two will be hoisted aboard.

(PAUSE)

This is Gemini Control Houston. Our Flight Dynamics bank is looking again at their reentry data. Their best estimate right now is the spacecraft missed the exact aiming point by some 3,000 yards. Three thousand (3,000) yards long, which they claim is pretty close for Government work.

(PAUSE)

This is Gemini Control Houston. We're estimating now that the spacecraft will be hoisted aboard in approximately 12 minutes. Twelve to thirteen minutes from now. This is Gemini Control Houston.

END OF TAPE

HOU — Coming up on one minute to retrofire.

S/C — Roger.

HOU — Mark, one minute.

S/C — .....sep elec and sep adap.

HOU — 30 seconds. 10, 9 8 7 6 5 4 3 2 1 - Retrofire!

S/C — garble

HOU — Roger.

S/C — The IVI's read 296 aft, 4 right, and 125 down.

HOU — Roger, say again your four aft.

S/C — Roger, 296.

HOU — Roger, 296. Sounds like a good one. Okay, confirm retro jet.

S/C — Roger, retro jet on time.

HOU — Thanks, Tom.

S/C — IVI's still read 296 aft, 4 right and 125 down.

HOU — Thanks, Tom.

S/C — We're rolling ...at this time.

HOU — Roger, copy.

AFD — Hawaii Cap Com, AFD.

HAW — AFD, Hawaii.

AFD — Okay, let me give you a RET time hack. Okay, four minutes, 20 seconds. Give it to you at 30.

HAW — Okay.

S/C — Houston, Gemini 9 Approach retro check list is complete.

This is Gemini Control Houston. While we await the pickup, still estimated perhaps 5 minutes from now, Gene Kranz the Flight Director is going around the loop and congratulating each station, each capsule communicator on the job they've done in the last three days. The far Western Pacific stations of course were out of contact for much of the interesting part. They play a vital role leading up to retrofire but they don't always get all of the two-way information as we go over the hill east of the United States. Gene's congratulating each one of them. We imagine that many of them are all even now preparing to make the long flight back to Houston. We've also just been handed a copy of a message which has been sent out to all the Department of Defense Forces which participated in this mission. It reads, "My sincerest congratulations and thanks to all of the Department of Defense Forces who participated in Gemini 9 for their fine contribution to our nations latest space accomplishment. We can all take pride in the high degree of professionalism demonstrated throughout this mission. I am confident that this same proficiency will continue in all of our space missions in the future." It is signed Lieutenant General Leighton I. Davis who is the Department of Defense Manager for Manned Spaceflight Support Operations. General Davis has been with us throughout this mission here in the Control Center in Houston. This is Gemini Control Houston.

END OF TAPE